MTNC040521A1
B19 Canada: B05

Color Television

Simplified

CT-30WX54J / CT-30WX54UJ / CT-30WC14J / CT-30WC14UJ

GN1

Please file and use this manual together with the service manual for Model CT-32HL44J, Order No. MTNC040418C1 .

Panasonic®

1. Safety precautions

General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injuryfrom electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautionswhen servicing high voltage equipment.

Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, usesafety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a wellinsulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shieldlimits the x ray radiation

around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a returnpath to the chassis, the reading should be between 240k Ω and 5.2M Ω . If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

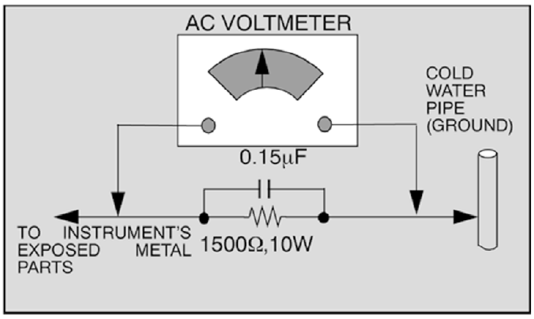
Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

Connect a 1.5k Ω 10 watt resistor in parallel with a 0.15 μ F capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts. Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliamp. Ifany measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

Hot check circuit



Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1500VAC/ 60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X ray radiation

WARNING
The potential source of x ray radiation in the TV set is in the high voltage section and the picture tube.

NOTE
It is important to use an accurate, calibrated high voltage meter.

Set the brightness, picture, sharpness and color controls to minimum.
Measure the high voltage. With a 480i signal the high voltage should be 30.5kV ± 0.3kV and with a 1080i signal the high voltage should be 30.5kV ± 0.3kV. If the upper limit is out of tolerance, immediate service and correctionis required to insure safe operation and to prevent the possibility of premature component failure.

Horizontal oscillator disable circuit test

This test must be performed as a final check before the receiver is returned to the customer. See horizontal oscillator disable circuit procedure check in this manual.

2. Service notes

NOTE
These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board,however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.
Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper).
Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.
Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.
Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

Component removal

1. Use solder wick to remove solder from component end caps or

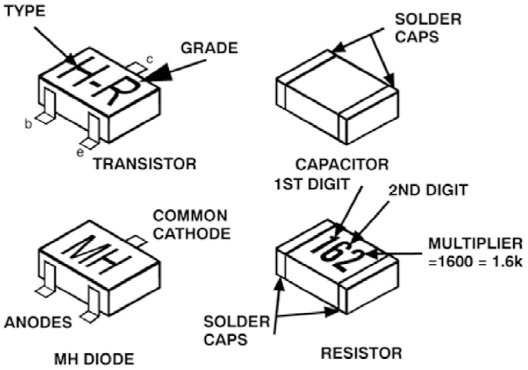
terminal.

2. **Without pulling up, carefully twist the component with tweezers to break the adhesive.**
3. **Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.**

Chip component installation

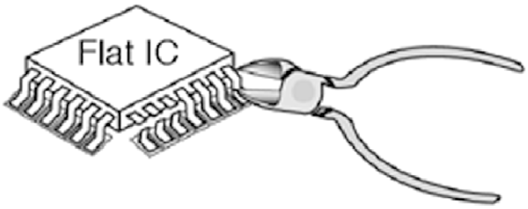
1. **Put a small amount of solder on the board soldering pads.**
2. **Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.**

Chip components

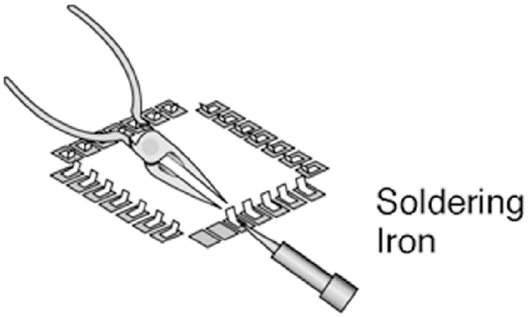

TYPE
GRADE
H-R
c
b
e
TRANSISTOR
SOLDER CAPS
CAPACITOR
1ST DIGIT
2ND DIGIT
MULTIPLIER =1600 = 1.6k
162
COMMON CATHODE
MH
ANODES
MH DIODE
SOLDER CAPS
RESISTOR

How to replace flat ic (required tools)

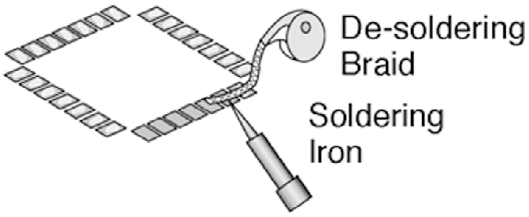
1. **Remove the solder from all of the pins of a Flat IC by using a desolder braid**



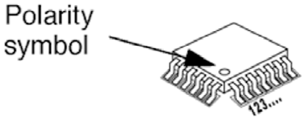
2. **Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.**

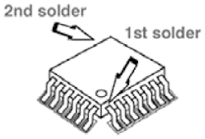

Soldering
Iron

3. **Remove the solder from all the pads of the Flat IC by using a de solder braid**

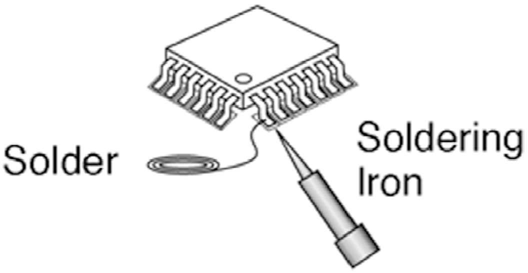

De-soldering
Braid
Soldering
Iron

4. **Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol**

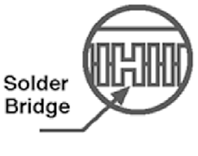

Polarity
symbol
123....

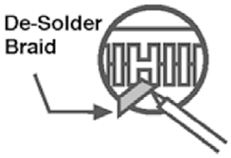

2nd solder
1st solder

5. **Solder all pins to the soldering pads using a fine tipped soldering iron**


Solder
Soldering
Iron

6. **Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below**


Solder
Bridge


De-Solder
Braid

IMPORTANT

To protect against possible damage to the solid state devices due to arching or static discharge, make certain that all ground wires and CRT DAG wire are securely connected.

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground(hot) or (cold) when servicing, or incorrect voltages will be measured.

WARNING

This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol on the schematic must be replaced with identical parts. Order parts from the manufacturer's partscenter using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

This chassis employs a special circuit to protect against excessive high voltage and beam current. If, for any reason, the high voltage and beam current exceed a predetermined level this protective circuit activates and detunes the horizontal oscillatorthat limits the high voltage. The over-voltage protection circuit is not adjustable. However, if components indicated by the symbol on the schematic in either the horizontal sweep system or the over-voltage protection circuit itself are changed, theoperation of the circuit should be checked using the following procedure:

Equipment needed to check the disabled circuit:

1. **High voltage meter (0 ~ 50kV)**
2. **Variac or isolation transformer**
3. **D.C. current meter**
4. **Digital voltmeter**

PREPARATION

1. Connect receiver to A.C. 120 Volts. Do not turn ON.
2. Connect HIGH VOLTAGE meter to 2nd anode (H.V. button).

NOTE
Use cold ground for negative lead.

3. Connect the ammeter serial from the flyback anode lead to the picture tube anode socket.

PROCEDURE

1. Apply a white pattern
2. Confirm that beam current is 2.0_mA.
3. Adjust VR524 so that high voltage is 30.5 ± 0.3kV.
4. Adjust VR538 so that digital meter reads 2.3 ± 0.05V
5. Apply a black pattern
6. Confirm that high voltage protector (SOS) operates at 35.5kV or less by adjusting VR524.
7. Turn VR524 counter clockwise, turn tv on and apply a white pattern.
8. Adjust VR524 so that high voltage meter reads 30.5 ± 0.3kV
9. Once the adjustment is completed, apply a bond on VR538 and VR538. Confirm B+ 142V ± 6.0V with 120V A.C. applied.

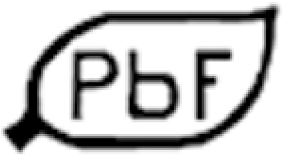
NOTE
If high voltage is not within the specified limit the cause must be determined before the receiver is returned to the owner.

3. About lead free solder (PbF)

NOTE

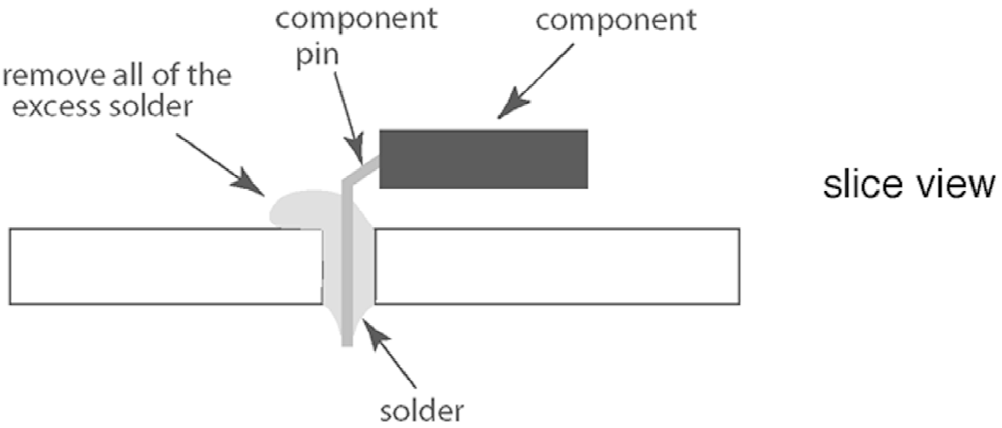
Lead is listed as (Pb) in the periodic table of elements. / In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder. / The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu). / Thatis Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For / service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be / used. / PCBs manufacturedusing lead free solder will have the "PbF" or a leaf symbol stamped on the / back of PCB.



CAUTION

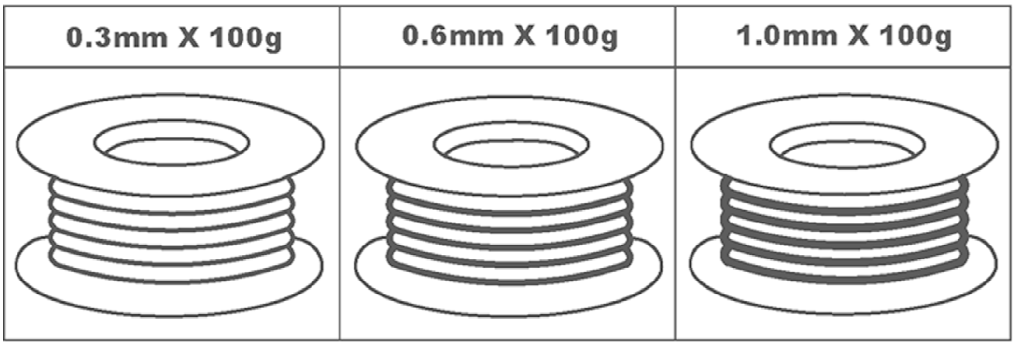
- **Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).**
- **Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C). / If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If thisis not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.**
- **After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.**



Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu

(tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also beused.



4. Receiver feature table

FEATURE/MODEL	CT-30WX54J/UJ	CT-30WC14J/UJ
CHASSIS	BP419	DP419
MICRO	256K	
MENU LANGUAGE	ENG/SPAN/FR	
CLOSE CAPTION	X	
V-CHIP (USA/CANADA	X	
CHANNEL INFO BANNER	X	
VIDEO INPUT SKIP	SKIP	
CHANNEL COUNT	181	
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT	
REMOTE CONTROL (W/LIGHT)	EUR7603ZF0	
CRT SUPPLIER	MTPD D-COM	
FAMILY	GN1	
COMB FILTER	MOTION ADP, 3DY/C	3 LINE
HEC/VEC (X=BOTH)	X	
VM	X (SELECTABLE)	
V/A NORM (X=BOTH)	X	
COLOR TEMP	X	
AIP	X	
PRESET/INPUT LABELING	X	
VIDEO PICTURE MEMORY	X	
DIGITAL SCAN RATE	1080i, 480p	
NTSC LINE DOUBLER	480p PROGRESSIVE	
MTS/SAP/DBX	X	
BUILT-IN AUDIO POWER	15W X 2	7.5W X 2
No. OF SPEAKERS	2	
BASS/BALANCE/TREBLE CONTROL	X	
AI SOUND	X	
SURROUND	X	
SPATIALIZER/BBE	BBE	

FEATURE/MODEL	CT-30WX54J/UJ	CT-30WC14J/UJ
A/V IN (REAR/FRONT)	4(3/1)	3(2/1)
PROGRAM OUT	X	
AUDIO OUT (FAO: F, VAO:V)	F, V	FAO
COMPONENT INPUT (Y, Pb, Pr)	2	
S-VHS INPUT (REAR/FRONT)	2/1	1/1
HDMI/HDCP INPUT	X	
WEIGHT (KG/LB)	54_KG/120_LB	
DIMENSIONS (W/D/H) mm	1004.0 / 670.0 / 706.0	

Note:
Specifications are subject to change without notice or obligation. Dimensions and weights are approximate.

5. Board description table

BOARD	CT-30WX54J/UJ	CT-30WC14J/UJ	DESCRIPTION
A-BOARD	TNP2AH061AC	TNP2AH061AE	MAIN CHASSIS
D-BOARD	TNP2AH062AE		HIGH VOLTAGE AND DEFLEC
DG-BOARD	TNP2AA173AD		DIGITAL VIDEO
DF-BOARD	TNP2AA172		DYNAMIC FOCUS
H-BOARD	TNP2AA174AB	TNP2AA174AG	REAR A/V
L-BOARD	TNP2AA169		CRT BOARD
K-BOARD	TNP2AA171AD		KEY BOARD
G-BOARD	TNP2AA170AD		FRONT A/V

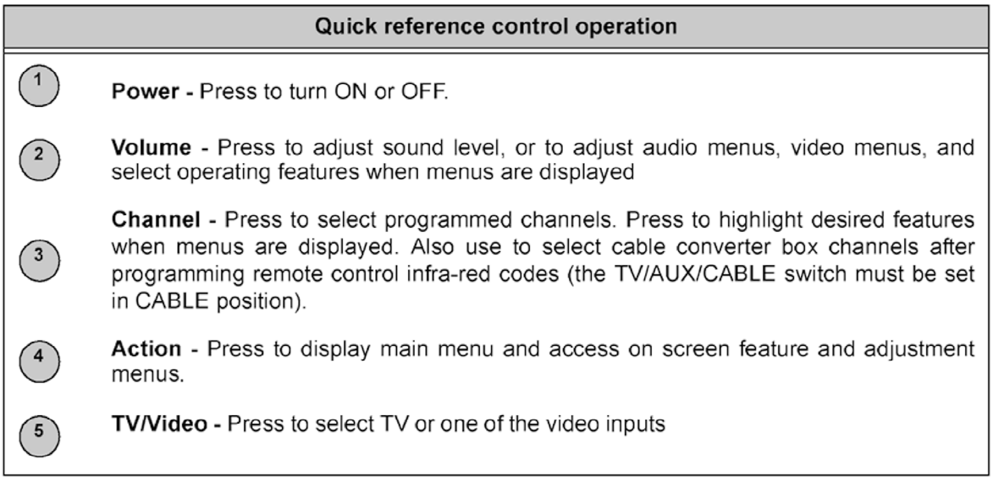
NOTE
When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE
To order the A Board, the replacement board is TNP2AH061ADS

NOTE:
The DG-Board is non-serviceable. If this board is defective, replace it with a new board.

6. TV Location of controls

Panasonic
HDTV



Quick reference control operation

①	**Power -** Press to turn ON or OFF.
②	**Volume** - Press to adjust sound level, or to adjust audio menus, video menus, and select operating features when menus are displayed
③	**Channel -** Press to select programmed channels. Press to highlight desired features when menus are displayed. Also use to select cable converter box channels after programming remote control infra-red codes (the TV/AUX/CABLE switch must be set in CABLE position).
④	**Action** - Press to display main menu and access on screen feature and adjustment menus.
⑤	**TV/Video -** Press to select TV or one of the video inputs

7. Auto diagnosis feature

This receiver incorporates a new self diagnosis feature. With this new feature will be easier for the technician to detect the failures. There is a LED located by the keyboard on the front panel, this LED will start flashing when a failure is detectedby the circuits located in specific areas, depending on how many times the LED is flashing, this will tell you what circuit should be checked. Make a count of flashing and see the table shown below. Please use this feature effectively especially forintermittent problems.

SOS of front LED

FLASHES	POSSIBLE CIRCUIT	SOS
1	POWER+140	140 OCP
2	LOW B+ D.C.	SOS 2
3	N/A	N/A
4	SUB 9V	SUB 9V
5	HI VOLTAGE HHS	GC2M
6	IC4001	GC3 FM
7	IC4201	GC3 FS
8	IC4401	GC3 I
9	DIGITAL TO DIGITAL INTERFACE LOCK	DDILOCK

AFTER THE COUNT
Proceed to check that area, verify what board is the problem located, this way the area to check will be reduced until the failure is found.

8. EEPROM copy jig

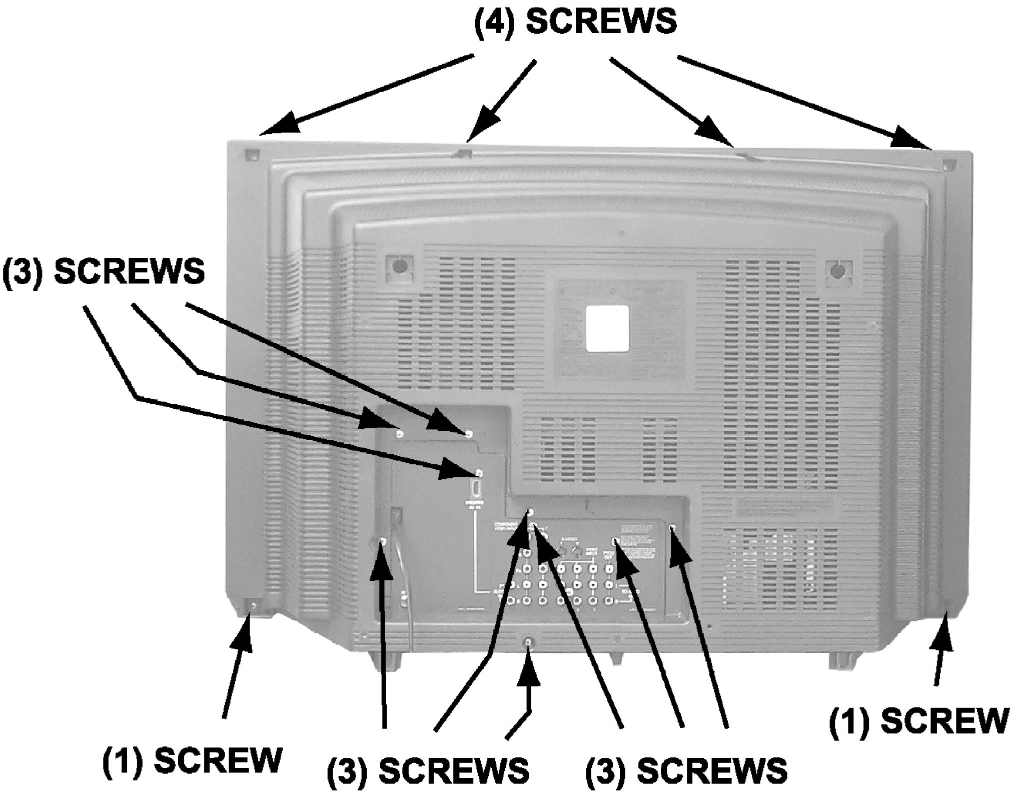
This CTV has a feature that allows to clone or back-up main EEPROM data adjustments from a CTV to other by connecting a jig to the CTV set. A jig part number TXFJIG02SER, is available through Matsushita/Panasonic Services.

Preparation:
To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into A15 connector located on the A-Board.

Procedure to copy data:

1. **Enter to service mode and display service menu.**
2. **Select “AREA” DAC and then press ACTION button on remote to enter. Press VOL right/left to select one of the following options then press ACTION:**
    - **Select ALL to copy all main EEPROM data**
    - **Select ADJ to copy only adjustment data.**
    - **Select FIX to copy only fix data**
3. **To copy data from main EEPROM to jig, select “IN → EX” DAC and press ACTION button on remote.**
4. **To copy data from jig to main EEPROM, select “EX → IN” DAC and press ACTION button on remote.**

9. Back cover removal



NOTE:
Appearance number of inputs may vary depending on the model.

10. Service mode (electronic adjustments)

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed byusing “on screen display menu”. (The service adjustment mode).

NOTE
It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiarwith the procedure, the flow chart for service mode may be used as a quick guide.

Quick entry to service mode

When minor adjustments need to be done to the electronic controls, the method of entering the service mode without removal of the cabinet back is as follows using the remote control:

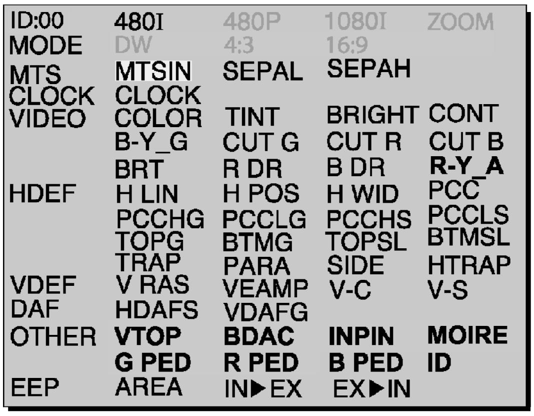
1. **Select SET-UP icon and select CABLE mode.**
2. **Select TIMER icon and set SLEEP time for 30 Min.**
3. **Exit menus.**
4. **Tune to the channel 124.**
5. **Adjust VOLUME to minimum (0).**
6. **Press VOL → (decrease) on receiver. Red "CHK" appears in upper corner.**

NOTE
After receiver is set into service mode, set TIMER back to NO.

To toggle between aging and service modes:

While the "CHK" is displayed on the left top corner of the CRT, pressing "ACTION" and "VOL" UP on the TV simultaneously will toggle between the modes. Red "CHK" for serviceand yellow "CHK" for aging.

7. **Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the volume right/left buttons and channel up/down buttons on the remote and ACTION to enter the adjustment.**


ID:00 480I 480P 1080I ZOOM
MODE DW 4:3 16:9
MTS MTSIN SEPAL SEPAH
CLOCK CLOCK
VIDEO COLOR TINT BRIGHT CONT
B-Y_G CUT G CUT R CUT B
BRT R DR B DR R-Y_A
HDEF H LIN H POS H WID PCC
PCCHG PCCLG PCCHS PCCLS
TOPG BTMG TOPSL BTMSL
TRAP PARA SIDE HTRAP
VDEF V RAS VEAMP V-C V-S
DAF HDAFS VDAFG
OTHER VTOP BDAC INPIN MOIRE
G PED R PED B PED ID
EEP AREA IN▶EX EX▶IN

NOTE
Some adjustments are available only in some modes (480i, 480p, 1080i); it is needed to apply the format. A 1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

Exiting the service mode:

This TV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF or unplug the TV from A.C.

Other method

Press ACTION and POWER on the receiver simultaneously for at least 2 seconds.
The receiver momentarily shuts off; then comes back on tuned to channel 3 with a preset level of sound.
Any programmed channels, channels caption data and some others user defined settings will be erased when exited by pressing ACTION and POWER on receiver.

IMPORTANT NOTE

Always check that the TV exits the service mode.

To confirm colors

When in service mode (red "CHK" is displayed) press RECALL on the remote control to enter the purity field check mode

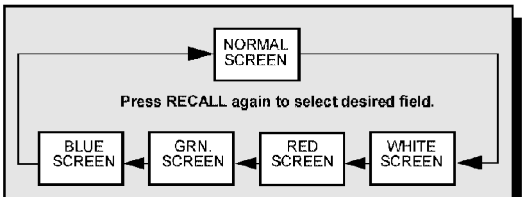


Figure 1. Purity check field mode.

Entering service mode (open-back method)

While the receiver is connected and operating in normal mode, momentarily short test point / FA1 (A15 pin 2) to cold ground (A-Board).
The receiver enters the aging mode.
Yellow letters "CHK" appear in the upper left corner of the screen. / (The volume right/left and channel up/down will adjust rapidly).

10.1. Service adjustment default values for service items

REGISTER	DESCRIPTION	FORMAT		
		NTSC	1080i	ZOOM
MTSIN	INPUT LEVEL	21	N/A	N/A
SEPAL	LOW LEVEL SEPARATION	06	N/A	N/A
SEPAH	HIGH LEVEL SEPARATION	19	N/A	N/A
CLOCK	CLOCK	128	N/A	N/A
COLOR	COLOR	20	20	N/A
TINT	TINT	80	80	N/A
BRIGH	SUB-BRIGHTNESS	09 A0	09 A0	N/A
CONT	SUB-CONTRAST	02 A0	02 A0	N/A
B-Y_G	MAGENTA TINT ADJ	3D	3C	N/A
CUT G	GREEN CUT-OFF	02 16	02 16	N/A
CUT R	RED CUT-OFF	02 72	02 72	N/A
CUT B	BLUE CUT-OFF	01 EA	01 EA	N/A
BRT	BRIGHT	0A 34	0A 34	N/A
R DR	RED DRIVE	85	85	N/A
B DR	BLUE DRIVE	87	87	N/A
R-Y_A	R-Y_A	80	80	N/A
HLIN	HORIZONTAL LINEARITY	53	80	N/A
HPOS	HORIZONTAL POSITIONING	03 45	03 CE	N/A
HWID	HORIZONTAL WIDTH	B4	77	N/A
PCC	PINCUSHION CORRECTION	9B	B8	B3
PCCHG	PINCUSHION HIGH	38	3E	3E
PCCLG	PINCUSHION LOW	39	3E	3E
PCCHS	PINCUSHION HIGH	05	05	05
PCCLS	PINCUSHION LOW	05	05	05
TOPG	TOP CORNER PINCUSHION	58	5A	5A
BTMG	BOTTOM CORNER PINCUSHION	58	57	57
TOPSL	TOP CORNER PINCUSHION SLICE LEVEL	03	03	03
BTMSL	BOTTOM CORNER PINCUSHION SLICE LEVEL	03	03	03
TRAP	TRAPEZOID	80	85	85
PARA	PARALLELOGRAM	10	10	10
SIDE	E-W PINCUSHION ADJUSTMENT	16	15	15
HTRAP	HORIZONTAL TRAPEZOID	20	20	20
VRAS	VERTICAL POSITION	91	AA	A2
VEAMP	VERTICAL SIZE	01 62	00 B0	01 A4
V-C	VERTICAL LINEARITY	6E	78	78
V-S	VERTICAL S CORRECTION	56	56	56
HDAFS	HORIZONTAL DAF PHASE	00 A4	01 B4	N/A
VTOP	VTOP	00 D9	00 D1	00 FA
BDAC	BDAC	73	77	N/A
INPIN	INPIN	20	20	20
MOIRE	MOIRE	80	80	80
G PED	G PED	80	N/A	N/A
R PED	R PED	80	N/A	N/A

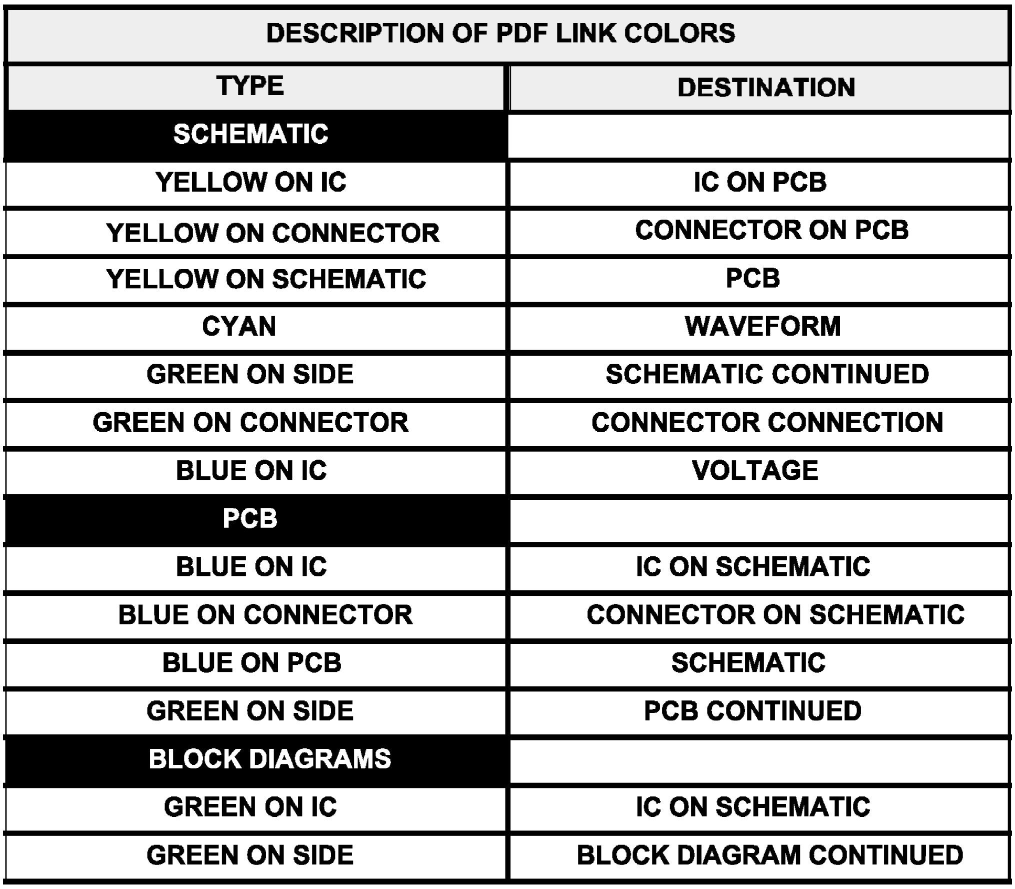
REGISTER	DESCRIPTION	FORMAT		
		NTSC	1080i	ZOOM
B PED	B PED	80	N/A	N/A

NOTE:
The above table shows the default values for the service items, this values may vary depending on the serviced TV.

	ID DATA		
MODEL	NTSC	1080i	ZOOM
CT-30WX54J/UJ	00	00	00
CT-30WC14J/UJ	0C	0C	0C

Important Note:
When changing “ID” register, message “Unplug AC to activate” will appear on the screen and the set must be unplugged.

11. Reference of PDF links color



DESCRIPTION OF PDF LINK COLORS	
TYPE	DESTINATION
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

12. Schematic Diagrams

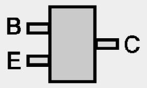
12.1. Schematic notes in english

Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ● ; Test point but no pin ○.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⊥ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices. Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

*CAUTION: **Incorrect ground connection of the test equipment will result in erroneous readings.***

WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to “MIN”.
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

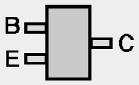
12.2. Schematic notes in spanish

Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ● Los puntos de prueba fuera de los componentes se indican con ○.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬ (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⏊ indica conexión a **Tierra Fría**.

***NOTA:** Los demas símbolos de componentes incluidos son usados con fines de diseño.*

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
     En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
     El nivel de Volumen se minimiza.
     De los modos TV y Video, seleccionar el modo TV.
     Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

***PRECAUCION:** Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.*

MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo

banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.

5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

***PRECAUCION:** Si no se utiliza la conexión a la tierra adecuada, se obtendrán*

ajusta al mínimo.

4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de

mediciones equivocadas y podría dañar el equipo de medición.

12.3. A-Board schematic 1 of 4

12.4. A-Board schematic 2 of 4

12.5. A-Board schematic 3 of 4

12.6. A-Board schematic 4 of 4

12.7. D-Board schematic 1 of 5

12.8. D-Board schematic 2 of 5

12.9. D-Board schematic 3 of 5

12.10. D-Board schematic 4 of 5

12.11. D-Board schematic 5 of 5

12.12. DF-Board schematic

12.13. H-Board schematic

13. Parts list

13.1. Description of abbreviations guide

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor
Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor
Example :
ECKF1H103ZF **C** 0.01μF, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

13.2. Parts list

Ref. No.	Part No.	Part Name & Description	Remarks
		CAPACITORS	
C037	**ECA0JM222B**	**CAP E 2200UF-6.3V**	
C038	**ECJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C047	**ECA1HM330B**	**CAP E 33UF-50V**	
C048	**ECA1HMR22B**	**CAP E .22UF-50V**	
C052	**ECA1HM4R7B**	**CAP E 4.7UF-50V**	
C053	**ECA1HM2R2B**	**CAP E 2.2UF-50V**	
C054	**ECA1HM4R7B**	**CAP E 4.7UF-50V**	
C055	**ECA1VM470B**	**CAP E 47UF-35V**	
C056	**ECA1VM471B**	**CAP E 470UF-35V**	
C059	**ECJ2VC1H101J**	**CAP C 100PF-J-50V**	
C060	**ECJ2VC1H101J**	**CAP C 100PF-J-50V**	
C061	**ECA1HMR22B**	**CAP E .22UF-50V**	
C062	**ECA1HM2R2B**	**CAP E 2.2UF-50V**	
C451	**ECA1EM471B**	**CAP E 470UF-25V**	
C452	**ECA1EM471B**	**CAP E 470UF-25V**	
C453	**ECA1HM101B**	**CAP E 100UF-50V**	
C454	**ECQV1H224JL3**	**CAP P .22UF-J-50V**	
C455	**ECA1CM221B**	**CAP E 10UF-16V**	
C456	**ECQB1H472JF3**	**CAP P 4700PF-J-50V**	
C457	**ECQB1H471JF3**	**CAP P 470PF-J-50V**	
C458	**ECQV1H105JL3**	**CAP P 1.0UF-J-50V**	
C459	**ECQE2104KF3**	**CAP P .10UF-K-200V**	
C460	**ECQE2224KF3**	**CAP P .22UF-K-200V**	

Ref. No.	Part No.	Part Name & Description	Remarks
C461	ECA1HM010B	CAP E 1UF-50V	
C462	ECA0JM221B	CAP E 220UF-6.3V	
C463	ECA1VM470B	CAP E 47UF-35V	
C465	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C466	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C467	ECQV1H224JL3	CAP P .22UF-J-50V	
C468	ECQB1H272JF3	CAP P 2700PF-J-50V	
C469	ECQB1H104JF3	CAP P .10UF-J-50V	
C471	ECQB1H104JF3	CAP P .10UF-J-50V	
C472	ECA1HM4R7B	CAP E 4.7UF-50V	
C502	ECQB1H104JF3	CAP P .10UF-J-50V	
C503	ECKR3A102KBP	CAP C 1000PF-K-1KV	
C505	ECQB1H104JF3	CAP P .10UF-J-50V	
C507	ECEA2CNR47SB	CAP E .47UF-160V	
C508	ECQB1H104JF3	CAP P .10UF-J-50V	
C509	ECKR3D222KBP	CAP C 2200PF-K-2KVDC	
C510	ECWH20272JVY	CAP P 2700PF-J-2KV	
C511	ECWH20272JVY	CAP P 2700PF-J-2KV	
C512	ECA1HMR47B	CAP E .47UF-50V	
C514	ECQM4472JZW	CAP P 4700PF-J-400V	
C516	ECQB1H223JF3	CAP P .022UF-J-50V	
C517	ECJ2VG1H151J	CAP C 150-J-50V	
C518	ECKW3D681KBR	CAP C 680PF-K-2KV	
C519	ECKW3D681KBP	CAP C 680PF-K-2KV	
C520	ECKW3D222KBP	CAP C 2200PF-K-2KV	
C521	ECWF2364JSR	CAP P .36UF-J-200V	
C522	ECWF4393RJB	CAP P .039UF-J-400V	
C523	ECQB1H104JF3	CAP P .10UF-J-50V	
C524	ECQE1224KF3	CAP P .22UF-K-100V	
C525	EEUNA1E220B	CAP E 22UF-25V	
C526	ECQB1H104JF3	CAP P .10UF-J-50V	
C527	ECQV1H224JL3	CAP P .22UF-J-50V	
C529	ECQB1H473JF3	CAP P .047UF-J-50V	
C532	ECQB1H104JF3	CAP P .10UF-J-50V	
C534	ECQB1H103JF3	CAP P .01UF-J-50V	
C535	ECQV1H104JL3	CAP P .10UF-J-50V	
C536	ECEA1EN100UB	CAP E 10UF-25V	
C537	ECQB1H473JF3	CAP P .047UF-J-50V	
C538	ECA1CM471B	CAP E 470UF-16V	
C539	ECA1CM471B	CAP E 470UF-16V	
C541	ECQE6103RKF	CAP P.010UF-K-100V	
C543	ECKW3D151KBP	CAP C 150PF-K-2KV	
C544	ECA1HM010B	CAP E 1UF-50V	
C545	ECKR3D471KBP	CAP C 470PF-K-2KV	
C546	ECKW3D102KBR	CAP C 1000PF-K-2KV	
C548	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C550	ECCN3A470KGE	CAP C 47PF-K-1KV	
C553	ECA1CM101B	CAP E 100UF-16V	
C554	ECA1VM101B	CAP E 100UF-35V	
C555	ECKR3D152KBP	CAP C .0015UF-K-2KVDC	
C556	ECA1VM470B	CAP E 47UF-35V	
C558	ECQM4332JZW	CAP C 3300PF-J-400V	
C560	ECA1HM100B	CAP E 10UF-50V	
C561	ECA2EHG470E	CAP E 47UF-250V	

Ref. No.	Part No.	Part Name & Description	Remarks
C562	ECKR3A561KBP	CAP C 560PF-K-1KV	
C563	EEUEB2E330E	CAP E 33UF-100V	
C564	ECA1VM470B	CAP E 47UF-35V	
C566	ECA1VM470B	CAP E 47UF-35V	
C567	EEUED2C101E	CAP E 100UF-100V	
C568	ECWF4683RJB	CAP P .068UF-R-400V	
C569	ECWF4683RJB	CAP P .068UF-R-400V	
C571	ECKRHT332KB	CAP C 3300PF-K-500V	
C573	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C574	ECA1CM100B	CAP E 10UF-16V	
C575	ECA1CM101B	CAP E 100UF-16V	
C576	ECA1CM101B	CAP E 100UF-16V	
C577	ECQE6473RKF	CAP C .047UF-R-630V	
C580	ECQB1H223JF3	CAP P .022UF-J-50V	
C581	ECQB1H104JF3	CAP P .10UF-J-50V	
C582	ECQB1H104JF3	CAP P .10UF-J-50V	
C589	ECQE6184JFB	CAP P .18UF-J-630V	
C590	ECJ2VB1H471K	CAP C 470PF-K-50V	
C713	ECKR3A222KBP	CAP C .0022UF-K-1KV	
C714	ECQE2103KF3	CAP P .010UF-K-200V	
C801	ECQU2A224MLA	CAP P .22UF-M-250V	⚠
C802	ECQU2A224MLA	CAP P .22UF-M-250V	⚠
C803	ECQU2A224MLA	CAP P .22UF-M-250V	⚠
C804	ECQU2A224MLA	CAP P .22UF-M-250V	⚠
C805	ECQB1H103JF3	CAP P .01UF-J-50V	
C806	ECQU2A103MLA	CAP P .010UF-M-250V	⚠
C807	ECKCNA222MEB	CAP C 2200PF-M-125V	⚠
C808	ECKCNA222MEB	CAP C 2200PF-M-125V	⚠
C809	ECQB1H471JF3	CAP P 470PF-J-50V	
C810	EETHC2D102J	CAP E 1000UF-200V	
C811	ECA1HM100B	CAP E 10UF-50V	
C812	ECA1CM471B	CAP E 470UF-16V	
C813	ECA1HM010B	CAP E 1UF-50V	
C815	ECA1EM471B	CAP E 470UF-25V	
C821	ECKW3D332KBP	CAP C 3300PF-K-2KV	
C822	ECQB1H102JF3	CAP P 1000PF-J-50V	
C823	ECQB1H471JF3	CAP P 470PF-J-50V	
C824	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C825	ECA1HHG470B	CAP E 47UF-50V	
C826	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C827	ECA1HHG010B	CAP E 1UF-50V	
C828	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C830	EC0S2DA471BB	CAP E 470UF-200V	
C831	ECKW3D102KBP	CAP C 1000PF-K-2KV	
C834	EEUFC1H222E	CAP E 2200UF-50V	
C835	ECA2EM101E	CAP E 100UF-250V	
C836	ECKR3A151KBP	CAP C 150PF-K-1KV	
C840	EEUFC1E222E	CAP E 2200UF-25V	
C841	ECA1VHG222E	CAP E 2200UF-35V	
C842	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C843	ECA1VHG222E	CAP E 2200UF-35V	
C844	ECKR3A471KBP	CAP C 470PF-K-1KV	

C644	ECKR3A471KBP	CAP C 470PF K 1KV	

Ref. No.	Part No.	Part Name & Description	Remarks
C846	ECEA1CN101UB	CAP E 100UF-16V	
C852	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C854	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C855	ECA1CM101B	CAP E 100UF-16V	
C855	EEUFC1A471B	CAP E 470UF-10V	
C857	ECA1HM471E	CAP E 470UF-50V	
C858	ECA1CM101B	CAP E 100UF-16V	
C864	ECEA1CN101UB	CAP E 100UF-16V	
C867	ECQM4103RJZ	CAP P .01UF-J-400V	
C871	ECA1CM102B	CAP E 1000UF-16V	
C875	ECQB1H473JF3	CAP P .047UF-J-50V	
C881	ECKR3A471KBP	CAP C 470PF-K-1KV	
C882	ECA1VHG222E	CAP E 2200UF-35V	
C900	ECJ2VF1C104Z	CAP C .1UF-Z-16V	
C901	ECJ2VC1H102K	CAP C .001UF-K-50V	
C903	ECJ2VF1C104Z	CAP C .1UF-Z-16V	
C905	ECA1CM221B	CAP E 10UF-16V	
C906	ECJ2VF1C104Z	CAP C .1UF-Z-16V	
C910	ECQB1223KF3	CAP P .22UF-K-100V	
C911	ECQM4103KZ3	CAP P .01UF-K-400V	
C912	ECA2CM330E	CAP E 30UF-160V	
C914	ECQB1223KF3	CAP P .22UF-K-100V	
C915	ECA2CHG330E	CAP E 33UF-160V	
C916	ECA1CM101B	CAP E 100UF-16V	
C917	ECA1CM101B	CAP E 100UF-16V	
C918	ECA1CM221B	CAP E 10UF-16V	
C919	ECJ2VC1H102K	CAP C .001UF-K-50V	
C920	ECJ2VC1H102K	CAP C .001UF-K-50V	
C927	ECJ2VF1C104Z	CAP C .1UF-Z-16V	
C1051	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C1052	ECEA1CKA470B	CAP E 47UF-16V	
C1401	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C1402	ECJ2VF1C104Z	CAP C .1UF-Z-16V	
C1403	ECA1VM470B	CAP E 47UF-35V	
C1501	ECA1VM470B	CAP E 47UF-35V	
C1502	ECQB1H103JF3	CAP P .01UF-J-50V	
C1505	ECQB1H103JF3	CAP P .01UF-J-50V	
C1506	ECQB1H223JF3	CAP P .022UF-J-50V	
C1507	ECQB1H223JF3	CAP P .022UF-J-50V	
C1522	ECA1VM101B	CAP E 100UF-35V	
C1523	ECA1VM470B	CAP E 47UF-35V	
C1526	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C1528	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C1535	ECA1HM100B	CAP E 10UF-50V	
C1557	ECQB1H102JF3	CAP P 1000PF-J-50V	
C1558	ECJ2VC1H680J	CAP C 68PF-J-50V	
C1559	ECQB1H102JF3	CAP P 1000PF-J-50V	
C1570	ECA1VM470B	CAP E 47UF-35V	
C2202	ECEA1HKA2R2B	CAP E 2.2UF-50V	
C2203	ECEA1HKA4R7B	CAP E 4.7UF-50V	
C2204	AP106K016CAE	CAP T 1OUF-16V	
C2205	ECEA1HKA010B	CAP E 1.0UF-50V	
C2206	ECQB1H223JF3	CAP P .022UF-J-50V	
C2207	AP335K016CAE	CAP T 3.3UF-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2208	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2209	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2210	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2211	ECEA1HKA100B	CAP E 1UF-50V	
C2212	ECQB1H473JF3	CAP P .047UF-J-50V	
C2215	ECEA1CKA101B	CAP E 100UF-16V	
C2218	ECEA1HKAR47B	CAP E .47UF-50V	
C2301	ECEA1HN100UB	CAP E 10UF-50V	
C2302	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2303	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2304	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2305	ECEA1HN100UB	CAP E 10UF-50V CT-30WX54J/UJ	
C2306	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2307	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2308	ECJ2VB1H332K	CAP C .0033UF-K-50V CT-30WX54J/UJ	
C2310	ECJ2VF1H104Z	CAP C .1UF-Z-50V CT-30WX54J /UJ	
C2311	ECA1EM221B	CAP E 220UF-25V CT-30WX54J/UJ	
C2313	ECA1HM4R7B	CAP E 4.7UF-50V CT-30WX54J/UJ	
C2315	ECA1HM4R7B	CAP E 4.7UF-50V CT-30WX54J/UJ	
C2318	ECA1HM2R2B	CAP E 2.2UF-50V	
C2320	F1J1C225A083	CAP C 2.2UF-Z-16V	
C2321	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2322	ECEA1CN100UB	CAP E 10UF-16V	
C2323	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2324	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2325	ECJ2VC1H270J	CAP C 27PF-J-50V	
C2326	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2327	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2328	ECA1EM101B	CAP E 100UF-25V	
C2329	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2330	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2331	ECJ2FB1H104K	CAP C .1UF-K-50V	
C2332	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2333	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2334	ECJ2FB1H104K	CAP C .1UF-K-50V	
C2335	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2336	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2337	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2338	ECJ2FB1H104K	CAP C .1UF-K-50V	
C2341	ECEA1CN100UB	CAP E 10UF-16V	
C2342	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2345	EEUFC1E222E	CAP E 2200UF-25V	
C2346	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2351	ECJ2VB1H561K	CAP C 560PF-K-50V CT-30WX54J /UJ	
C2352	ECJ2VB1H561K	CAP C 560PF-K-50V CT-30WX54J /UJ	
C2352	EEUFC1E222E	CAP E 2200UF-25V	
C2353	EEUFC1E222E	CAP E 2200UF-25V	
C2354	ECJ2VB1H561K	CAP C 560PF-K-50V CT-30WX54J /UJ	
C2355	ECJ2VB1H561K	CAP C 560PF-K-50V CT-30WX54J /UJ	
C2357	ECJ2VF1H104Z	CAP C .1UF-Z-50V CT-30WX54J /UJ	
C2359	ECQV1H224JL3	CAP P .22UF-J-50V	
C2362	ECQV1H224JL3	CAP P .22UF-J-50V	
C2364	ECJ2FB1H104K	CAP C .1UF-K-50V	
C2365	ECJ2FB1H104K	CAP C .1UF-K-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2365	**ECJ2VF1H104Z**	**CAP C .1UF-Z-50V CT-30WX54J /UJ**	
C2366	**EEUFC1E222E**	**CAP E 2200UF-25V**	
C2370	**ECJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C2371	**ECEA1CN100UB**	**CAP E 10UF-16V**	
C2372	**ECEA1CN100UB**	**CAP E 10UF-16V**	
C2373	**ECA1HM100B**	**CAP E 10UF-50V**	
C2374	**ECA1HM100B**	**CAP E 10UF-50V**	
C2375	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2376	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2377	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2378	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2404	**ECJ2VB1H223K**	**CAP C .022UF-K-50V CT-30WX54J /UJ**	
C2406	**ECJ2FB1H104K**	**CAP C .1UF-K-50V CT-30WX54J /UJ**	
C2408	**ECEA1CN100UB**	**CAP E 10UF-16V CT-30WX54J/UJ**	
C2410	**ECA1HM100B**	**CAP E 10UF-50V CT-30WX54J/UJ**	
C2414	**ECJ2VB1H223K**	**CAP C .022UF-K-50V CT-30WX54J /UJ**	
C2416	**ECJ2FB1H104K**	**CAP C .1UF-K-50V CT-30WX54J /UJ**	
C2418	**ECEA1CN100UB**	**CAP E 10UF-16V CT-30WX54J/UJ**	
C2451	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2452	**ECJ2VB1H472K**	**CAP C .0047UF-K-50V**	
C2453	**ECJ2VB1H223K**	**CAP C .022UF-K-50V**	
C2454	**ECJ2VB1H332K**	**CAP C .0033UF-K-50V**	
C2455	**ECJ2FB1C684K**	**CAP C .68UF-Z-16V**	
C2456	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2457	**ECJ2VB1C104K**	**CAP C .1UF-K-16V**	
C2458	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2459	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2460	**ECJ2VB1H103K**	**CAP C .01UF-K-50V**	
C2461	**ECA1CM221B**	**CAP E 10UF-16V**	
C2462	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2463	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2464	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2465	**ECJ2VB1C104K**	**CAP C .1UF-K-16V**	
C2466	**ECJ2FB1C684K**	**CAP C .68UF-Z-16V**	
C2467	**ECJ2VB1H332K**	**CAP C .0033UF-K-50V**	
C2468	**ECJ2VB1H223K**	**CAP C .022UF-K-50V**	
C2469	**ECJ2VB1H472K**	**CAP C .0047UF-K-50V**	
C2470	**ECJ2VF1C105Z**	**CAP C 1.0UF-Z-16V**	
C2851	**ECA1EM471B**	**CAP E 470UF-25V**	
C2852	**ECA1CM221B**	**CAP E 10UF-16V**	
C2855	**ECA1EM471B**	**CAP E 470UF-25V CT-30WX54J/UJ**	
C2855	**ECA1VM221B**	**CAP E 220UF-35V**	
C2857	**EEUFC1C471B**	**CAP E 470UF-16V**	
C2859	**ECJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C2861	**ECA1CM471B**	**CAP E 470UF-16V CT-30WX54J/UJ**	
C2861	**EEUFC1A471B**	**CAP E 470UF-10V**	
C2862	**ECA1HM471E**	**CAP E 470UF-50V**	
C2862	**ECA1VM471B**	**CAP E 470UF-35V CT-30WX54J/UJ**	
C2865	**ECA1CM221B**	**CAP E 10UF-16V CT-30WX54J/UJ**	
C2865	**ECA1EM221B**	**CAP E 220UF-25V**	
C2867	**EEUFC1A471B**	**CAP E 470UF-10V**	
C2869	**ECJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C2870	**ECA1CM221B**	**CAP E 10UF-16V CT-30WX54J/UJ**	
C2870	**ECA1EM221B**	**CAP E 220UF-25V**	

Ref. No.	Part No.	Part Name & Description	Remarks
C2872	EEUFC1A471B	CAP E 470UF-10V	
C2874	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2875	ECA1CM471B	CAP E 470UF-16V	
C2877	EEUFC1A102B	CAP E 1000UF-10V	
C2877	EEUFC1A471B	CAP E 470UF-10V CT-30WX54J/UJ	
C2879	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2881	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2882	ECJ2VB1H103K	CAP C .01UF-K-50V	
C2884	ECA0JM222B	CAP E 2200UF-6.3V	
C2891	ECJ2VF1H103Z	CAP C .01UF-Z-50V CT-30WX54J /UJ	
C2892	ECJ2VF1H103Z	CAP C .01UF-Z-50V CT-30WX54J /UJ	
C3331	ECJ2VB1H152K	CAP C .0015UF-K-50V CT-30WX54J/UJ	
C3332	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V CT-30WX54J /UJ	
C3333	ECJ2VB1H152K	CAP C .0015UF-K-50V CT-30WX54J/UJ	
C3334	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V CT-30WX54J /UJ	
C3335	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3336	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3337	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3338	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3339	ECJ2VB1H103K	CAP C .01UF-K-50V	
C3340	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3341	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3342	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3343	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3344	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3345	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3346	ECJ2VB1H103K	CAP C .01UF-K-50V CT-30WX54J /UJ	
C3347	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3348	ECJ2YB1A105K	CAP C 1.0UF-K-125V CT-30WX54J /UJ	
C3349	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3350	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3351	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3352	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3353	ECJ2YB1A105K	CAP C 1.0UF-K-125V CT-30WX54J /UJ	
C3354	ECJ2VB1H152K	CAP C .0015UF-K-50V CT-30WX54J/UJ	
C3355	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V CT-30WX54J /UJ	
C3357	ECJ2VB1H152K	CAP C .0015UF-K-50V CT-30WX54J/UJ	
C3358	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V CT-30WX54J /UJ	
C3359	ECA1EM471E	CAP E 470UF-25V	
C3360	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3361	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3362	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3363	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3364	ECJ2YB1A105K	CAP C 1.0UF-K-125V CT-30WX54J /UJ	
C3365	ECJ2YB1A105K	CAP C 1.0UF-K-125V CT-30WX54J /UJ	
C3366	ECJ2YB1A105K	CAP C 1.0UF-K-125V CT-30WX54J /UJ	
C3367	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3368	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3369	ECJ2YB1A105K	CAP C 1.0UF-K-125V	
C3401	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3402	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C3405	ECA1HM010B	CAP E 1UF-50V	
C3406	ECA1HM010B	CAP E 1UF-50V	
C3801	ECA1CM101B	CAP E 100UF-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C3802	ECA1VM470B	CAP E 47UF-35V	
C3803	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C3804	ECQE2104KF3	CAP P .10UF-K-200V	
C3805	ECA2DM330B	CAP E 33UF-200V	
C3806	ECQE2474KF3	CAP P .47UF-K-200V	
C3807	ECQE2474KF3	CAP P .47UF-K-200V	
C3808	ECKC3D332KBN	CAP C 3300PF-K-2KV	
C3809	ECQE2474KF3	CAP P .47UF-K-200V	
C3811	ECQE2103KF3	CAP P .010UF-K-200V	
C3812	ECQE2104KF3	CAP P .10UF-K-200V	
C3813	ECQE2104KF3	CAP P .10UF-K-200V	
C3814	ECQE2104KF3	CAP P .10UF-K-200V	
C3815	ECQE2103KF3	CAP P .010UF-K-200V	
C3816	ECQE2103KF3	CAP P .010UF-K-200V	
C3817	ECQE2103KF3	CAP P .010UF-K-200V	
C3825	ECA2EM010B	CAP E 1UF-250V	
C3826	ECA1VM470B	CAP E 47UF-35V	
C3827	ECJ2VB1H103K	CAP C .01UF-K-50V	
C3828	ECJ2VB1H103K	CAP C .01UF-K-50V	
C3829	ECKR2H102KB5	CAP C 1000PF-K-500V	
C3830	ECA2EM470E	CAP E 47UF-250V	
C5501	ECEA1CN220UB	CAP E 22UF-16V	
C5506	ECJ2VB1C104K	CAP C .1UF-K-16V	
C5507	ECEA1CN220UB	CAP E 22UF-16V	
C5801	ECA1CM101B	CAP E 100UF-16V	
C5803	ECA1CM101B	CAP E 100UF-16V	
C5804	ECJ2VB1C104K	CAP C .1UF-K-16V	
C5805	ECA1VM470B	CAP E 47UF-35V	
C5807	ECQB1H104JF3	CAP P .10UF-J-50V	
C5808	ECA1VM470B	CAP E 47UF-35V	
		DIODES	
D005	MA3X152K0L	DIODE	
D009	MA2C165001VT	DIODE	
D012	MAZ40360MF	DIODE ZENER	
D460	MA2C165001VT	DIODE	
D461	MA2C165001VT	DIODE	
D462	MAZ40300MF	DIODE ZENER	
D463	MA2C165001VT	DIODE	
D465	MAZ40390MF	DIODE ZENER	
D466	MA2C165001VT	DIODE	
D468	MA2C165001VT	DIODE	
D469	MAZ40300MF	DIODE ZENER	
D470	MA2C165001VT	DIODE	
D471	MA2C700A0F	DIODE	
D501	MAZ41500MF	DIODE ZENER	
D502	MAZ41500MF	DIODE ZENER	
D503	B0HALP000002	DIODE FAST RECOVERY	
D506	B0JAME000058	DIODE SCHOTTKY BARRIER	
D507	B0JAME000058	DIODE SCHOTTKY BARRIER	
D508	B0HAGV000004	DIODE FAST RECOVERY	
D509	MA2C165001VT	DIODE	
D510	MAZ40820MF	DIODE ZENER	⚠
D511	B0EALV000001	DIODE RECTIFIER	
D513	MAZ42700MF	DIODE ZENER	

D513	MAZ42700MF	DIODE ZENER	

Ref. No.	Part No.	Part Name & Description	Remarks
D516	MAZ40390MF	DIODE ZENER	
D517	B0HALP000002	DIODE FAST RECOVERY	
D518	MA2C165001VT	DIODE	
D519	B0HALP000002	DIODE FAST RECOVERY	
D521	MAZ41800MF	DIODE ZENER	
D522	B0AAGR000002	DIODE SWITCHING	
D523	FMRG5HSLF731	DIODE	
D524	MA2C165001VT	DIODE	
D525	B0HALP000002	DIODE FAST RECOVERY	
D528	B0HALP000002	DIODE FAST RECOVERY	
D532	MA2C165001VT	DIODE	
D533	MA2C700A0F	DIODE	
D534	MA2C165001VT	DIODE	
D539	MA2C165001VT	DIODE	
D540	B0HALP000002	DIODE FAST RECOVERY	
D541	B0JAME000058	DIODE SCHOTTKY BARRIER	
D542	B0HACW000002	DIODE FAST RECOVERY	
D543	MA2C165001VT	DIODE	
D544	B0AAGR000002	DIODE SWITCHING	
D545	B0AAGR000002	DIODE SWITCHING	
D549	MA2C165001VT	DIODE	
D556	B0HAHM000008	DIODE FAST RECOVERY	
D584	MA2C165001VT	DIODE	
D701	MA2C029TAF	DIODE	
D702	MA2C029TAF	DIODE	
D801	B0FBAT000005	DIODE RECTIFIER	⚠
D803	D4DDF1R50001	DIODE	⚠
D804	B0EAKL000008	DIODE RECTIFIER	
D805	B0EAKL000008	DIODE RECTIFIER	
D807	MA2C165001VT	DIODE	
D809	ERZV10D391	VARISTOR SURGE ABSORBER	⚠
D811	B0EAKL000008	DIODE RECTIFIER	
D814	MA2C165001VT	DIODE	
D815	MA2C165001VT	DIODE	
D816	MA2C165001VT	DIODE	
D817	MAZ42200LF	DIODE ZENER	
D819	MA2C165001VT	DIODE	
D820	AU01ZV0	DIODE	
D822	B0HAMM000036	DIODE FAST RECOVERY	
D823	MAZ406800F	DIODE ZENER	
D824	B0BA01000046	DIODE VOLTAGE REGULATION	
D825	B0HANR000003	DIODE FAST RECOVERY	
D827	B0HANM000016	DIODE FAST RECOVERY	
D828	MA3D690	DIODE	
D829	S2L20UF04P12	DIODE	
D830	MA3D690	DIODE	
D831	MAZ41300MF	DIODE ZENER	
D832	MAZ41100HF	DIODE ZENER	
D833	MA2C165001VT	DIODE	
D834	MAZ40360MF	DIODE ZENER	
D835	MA2C165001VT	DIODE	
D836	MAZ41600MF	DIODE ZENER	
D837	B0HAGV000004	DIODE FAST RECOVERY	

Ref. No.	Part No.	Part Name & Description	Remarks
D844	MA2C165001VT	DIODE	
D845	MAZ41500MF	DIODE ZENER	
D850	MA2C165001VT	DIODE	
D857	MA2C165001VT	DIODE	
D859	MA2C165001VT	DIODE	
D861	AU02ZV0	DIODE	
D862	MA2C165001VT	DIODE	
D863	MAZ43300MF	DIODE ZENER	
D866	B0EAKT000018	DIODE RECTIFIER	
D867	MA2C165001VT	DIODE	
D875	MA3D690	DIODE	
D876	B0JCME000025	DIODE SCHOTTKY BARRIER	
D1001	LN81RPH	DIODE	
D1051	MA2C165001VT	DIODE	
D1052	MA2C165001VT	DIODE	
D1401	MA3X152E0L	DIODE	
D1503	MA3X152K0L	DIODE	
D1550	MA2C700A0F	DIODE	
D1555	B0EAKL000008	DIODE RECTIFIER	
D1560	MAZ40360MF	DIODE ZENER	
D2301	MAZ42700MF	DIODE ZENER	
D2302	MA3X152K0L	DIODE	
D2303	MA2C16700E	DIODE CT-30WX54J/UJ	
D2305	MA3X152K0L	DIODE	
D2307	MA2C16700E	DIODE CT-30WX54J/UJ	
D2308	MAZ42700MF	DIODE ZENER	
D2325	MA3X152K0L	DIODE	
D2351	MA2C16700E	DIODE	
D2852	B0JCME000025	DIODE SCHOTTKY BARRIER	
D2856	B0JCME000025	DIODE SCHOTTKY BARRIER	
D2858	B0JCME000025	DIODE SCHOTTKY BARRIER	
D2860	B0JCME000025	DIODE SCHOTTKY BARRIER	
D2861	B0JAME000058	DIODE SCHOTTKY BARRIER	
D2862	B0JCME000025	DIODE SCHOTTKY BARRIER CT-30WX54J/UJ	
D2881	MA2C165001VT	DIODE	
D2882	MA2C165001VT	DIODE	
D2883	MA2C165001VT	DIODE	
D2884	MA2C165001VT	DIODE	
D3301	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3302	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3304	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3306	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3307	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3308	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3309	MAZ31100ML	DIODE ZENER	
D3310	MAZ31100ML	DIODE ZENER	
D3312	MAZ31100ML	DIODE ZENER	
D3314	MAZ31100ML	DIODE ZENER	
D3316	MAZ31100ML	DIODE ZENER	
D3317	MAZ31100ML	DIODE ZENER	
D3318	MAZ31100ML	DIODE ZENER	
D3319	MAZ31100ML	DIODE ZENER	
D3320	MAZ31100ML	DIODE ZENER	
D3321	MAZ31100ML	DIODE ZENER	

Ref. No.	Part No.	Part Name & Description	Remarks
D3322	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3323	MAZ31100ML	DIODE ZENER	
D3324	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3325	MAZ31100ML	DIODE ZENER	
D3326	MAZ31100ML	DIODE ZENER	
D3328	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3329	MAZ31100ML	DIODE ZENER CT-30WX54J/UJ	
D3330	MAZ31100ML	DIODE ZENER	
D3332	CVS20A120MTA	DIODE	
D3334	CVS20A120MTA	DIODE	
D3335	MAZ31100ML	DIODE ZENER	
D3336	MAZ31100ML	DIODE ZENER	
D3403	MAZ31100ML	DIODE ZENER	
D3404	MAZ31100ML	DIODE ZENER	
D3405	MAZ31100ML	DIODE ZENER	
D3406	MAZ31100ML	DIODE ZENER	
D3407	MAZ31100ML	DIODE ZENER	
D3408	MAZ31100ML	DIODE ZENER	
D3409	MAZ31100ML	DIODE ZENER	
D3410	MAZ31100ML	DIODE ZENER	
D3801	MAZ40620L3TV	DIODE ZENER	
D3805	MA2C18800E	DIODE	
D3807	MA2C18800E	DIODE	
D3812	MAZ41300MF	DIODE ZENER	
D3813	B0HAGP000003	DIODE FAST RECOVERY	
D3816	MA2C18800E	DIODE	
D3817	MA2C18800E	DIODE	
D3819	MA2C0290AF	DIODE	
D3820	MA2C0290AF	DIODE	
D3821	MA2C0290AF	DIODE	
D3823	B0HALP000002	DIODE FAST RECOVERY	
D3824	B0HAGP000003	DIODE FAST RECOVERY	
D3831	B0HALP000002	DIODE FAST RECOVERY	
D3833	B0HALP000002	DIODE FAST RECOVERY	
D3834	MA2C18800E	DIODE	
D3835	MA2C18800E	DIODE	
D3836	MA2C18800E	DIODE	
D3837	MA2C18800E	DIODE	
D3838	MA2C18800E	DIODE	
D3839	MA2C18800E	DIODE	
D3844	ERZV07D361	VARISTOR SURGE ABSORBER	
D3850	MA2C18800E	DIODE	
FUSES			
F801	XBA2A00101	FUSE 6.3A 125V	⚠
INTEGRATED CIRCUITS			
IC002	C3EBKC000008	INTEGRATED CIRCUIT	
IC002	TVR2AJ201S	EEPROM CT-30WC14J/UJ	
IC002	TVR2AJ202S	EEPROM CT-30WX54J/UJ	
IC006	C1AB00000441	INT. CKT.	
IC451	C1AA00000665	INT CKT	
IC500	C0AABB000107	IC (OPERATIONAL AMPLIFIER)	
IC501	AN1431T-TA	INT CKT	
IC502	AN5751N	INT CKT	
IC503	0N3171R	INT CKT	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
IC504	0N3171R	INT CKT	
IC507	AN6914	INT CKT	
IC801	C5HABZZ00126	INT CKT	
IC802	C0EAS0000024	IC (VOLTAGE DETECTING)	
IC804	B0EBKM000016	DIODE RECTIFIER	
IC805	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC811	0N3171R	INT CKT	⚠
IC1401	C0BBBA000043	IC (COMPARATOR)	
IC1501	C0BBBA000043	IC (COMPARATOR)	
IC1502	C0ABBA000073	IC (OPERATIONAL AMPLIFIER)	
IC1503	C0BBBA000043	IC (COMPARATOR)	
IC2201	AN5849S-E1V	INT CKT	
IC2301	C1AA00000645	INT CKT	
IC2303	C0BBBA000043	IC (COMPARATOR) CT-30WX54J CT-30WX54UJ	
IC2305	C0ABBA000073	IC (OPERATIONAL AMPLIFIER)	
IC2451	NJW1164MPTE1	INT. CKT.	
IC2851	C0CACKG00003	IC (VOLTAGE REGULATOR)	
IC2852	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2854	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2855	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2856	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2857	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC3801	C1AA00000662	INT CKT	
IC5801	AN15530B	INT CKT	
IC5802	C0AABB000107	IC (OPERATIONAL AMPLIFIER)	
COILS			
L002	ELESN330JA	COIL PEAKING 33UH	
L009	ELELN330KA	COIL PEAKING 33UH	
L011	ELELN330KA	COIL PEAKING 33UH	
L452	EXCELDR35V	FERRITE BEAD	
L453	ELC18B152L	COIL CHOKE	
L454	EXCELSA35T	FERRITE BEAD	
L501	EXCELSA24T	FERRITE BEAD	
L502	EXCELSA24T	FERRITE BEAD	
L503	ELC12D103E	COIL CHOKE	
L504	EXCELSA26T	FERRITE BEAD	
L505	EXCELSA26T	FERRITE BEAD	
L506	EXCELSA24T	FERRITE BEAD	
L509	ELC09D100F	COIL CHOKE 10UH	
L510	ELC12D103E	COIL CHOKE	
L514	EXCELSA35T	FERRITE BEAD	
L515	ELC09D471F	COIL CHOKE 470UH	
L516	ELC09D101DF	COIL CHOKE 100UH	
L516	ELC09D101F	COIL CHOKE 100UH	
L522	ELC18E121L	COIL CHOKE 120UH	
L552	G0D8R5000001	COIL	
L553	EXCELSA24T	FERRITE BEAD	
L554	ELH5L8116	COIL LINEARITY	
L561	G0A332DA0017	COIL LINE CHOKE	
L812	EXCELSA39V	FERRITE BEAD	
L813	EXCELSA39V	FERRITE BEAD	
L816	EXCELSA39E	FERRITE BEAD	
L817	EXCELSA24T	FERRITE BEAD	
L818	EXCELSA24T	FERRITE BEAD	

[illegible]	[illegible]	FERRITE BEAD	

Ref. No.	Part No.	Part Name & Description	Remarks
L819	EXCELDR35V	FERRITE BEAD	
L821	EXCELSA39E	FERRITE BEAD	
L823	TLUADTB820K	COIL	
L824	EXCELDR35V	FERRITE BEAD	
L825	ELC09D470DF	COIL CHOKE 47UH	
L826	ELC09D101DF	COIL CHOKE 100UH	
L827	ELC09D101DF	COIL CHOKE 100UH	
L829	EXCELDR25V	FERRITE BEAD	
L830	EXCELDR35V	FERRITE BEAD	
L831	EXCELDR35V	FERRITE BEAD	
L836	EXCELDR35V	FERRITE BEAD	
L845	G0A101ZA0041	COIL LINE CHOKE	
L846	ELC09D220DF	COIL CHOKE 22UH	
L901	TALV35VB100J	COIL	
L903	EXCELSA35T	FERRITE BEAD	
L904	EXCELSA35T	FERRITE BEAD	
L906	TALV35VB330J	COIL	
L2201	ELESN100JA	COIL PEAKING 10UH	
L2304	ELC12E390	COIL CHOKE 39UH	
L2305	ELC12E390	COIL CHOKE 39UH	
L2306	EXCELDR35V	FERRITE BEAD	
L2307	EXCELDR35V	FERRITE BEAD	
L2341	G0A330G00010	COIL LINE CHOKE	
L2342	G0A330G00010	COIL LINE CHOKE	
L2854	G0A101ZA0041	COIL LINE CHOKE	
L2855	G0A220GA0002	COIL LINE CHOKE	
L2860	G0A470ZA0041	COIL LINE CHOKE	
L2863	G0A470ZA0041	COIL LINE CHOKE	
L2866	G0A470ZA0041	COIL LINE CHOKE	
L2868	G0A470ZA0041	COIL LINE CHOKE	
L2869	G0A470ZA0041	COIL LINE CHOKE	
L3303	G0BYYYY00016	TRANSFORMER	
L3304	G0BYYYY00016	TRANSFORMER	
L3401	G0BYYYY00016	TRANSFORMER	
L3403	EXCELSA35T	FERRITE BEAD	
L3801	TALV35VB2R2J	COIL	
L3802	TALV35VB2R2J	COIL	
L3803	TALV35VB2R2J	COIL	
L3804	EXCELSA24T	FERRITE BEAD	
L3806	EXCELDR35V	FERRITE BEAD	
L3807	EXCELDR35V	FERRITE BEAD	
L3812	EXCELDR35V	FERRITE BEAD	
L3813	EXCELDR35V	FERRITE BEAD	
L3825	EXCELSA24T	FERRITE BEAD	
L3826	EXCELSA35T	FERRITE BEAD	
L3830	EXCELSA24T	FERRITE BEAD	
LF801	G0B650H00002	COIL	⚠
LF802	G0B332H00002	COIL	⚠
LF803	G0B332H00002	COIL	⚠
TRANSISTORS			
Q002	UNR221100L	TRANSISTOR	
Q003	UNR211500L	TRANSISTOR	
Q013	2PD601AR-115	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q404	2PD601AR-115	TRANSISTOR	
Q405	2PD601AR-115	TRANSISTOR	
Q406	2PD601AR-115	TRANSISTOR	
Q459	2SC1473AR	TRANSISTOR	
Q501	B1CEML000001	TRANSISTOR	
Q511	2PB709AR-115	TRANSISTOR	
Q512	2PD601AR-115	TRANSISTOR	
Q513	2PD601AR-115	TRANSISTOR	
Q514	2PD601AR-115	TRANSISTOR	
Q515	2PB709AR-115	TRANSISTOR	
Q516	2PD601AR-115	TRANSISTOR	
Q517	2PB709AR-115	TRANSISTOR	
Q551	2SC5686000LK	TRANSISTOR	
Q556	B1DAFU000002	TRANSISTOR	
Q560	B1DGDN000001	TRANSISTOR	
Q561	B1DEDQ000009	TRANSISTOR	
Q563	B1BAAT000001	TRANSISTOR	
Q564	2SC1685QRSTA	TRANSISTOR	
Q565	2SC3311ASTA	TRANSISTOR	
Q566	2SC3311ASTA	TRANSISTOR	
Q701	B1DEDP000003	TRANSISTOR	
Q702	2PD601AR-115	TRANSISTOR	
Q703	2PD601AR-115	TRANSISTOR	
Q704	2PB709AR-115	TRANSISTOR	
Q802	2SC1685QRSTA	TRANSISTOR	
Q803	2SC1685QRSTA	TRANSISTOR	
Q804	UNR221100L	TRANSISTOR	
Q815	2PD601AR-115	TRANSISTOR	
Q816	2PD601AR-115	TRANSISTOR	
Q820	2SD2177RTA	TRANSISTOR	
Q821	2SB14340RA	TRANSISTOR	
Q822	2SA1309ATA	TRANSISTOR	
Q823	2PD601AR-115	TRANSISTOR	
Q824	2SA1309ATA	TRANSISTOR	
Q825	2PD601AR-115	TRANSISTOR	
Q826	2PD601AR-115	TRANSISTOR	
Q827	2SB1011RL	TRANSISTOR	
Q831	2SA1309ATA	TRANSISTOR	
Q900	2PD601AR-115	TRANSISTOR	
Q901	2PD601AR-115	TRANSISTOR	
Q903	2PD601AR-115	TRANSISTOR	
Q904	2PB709AR-115	TRANSISTOR	
Q905	2PD601AR-115	TRANSISTOR	
Q906	2SD592A	TRANSISTOR	
Q907	2SB621ATA	TRANSISTOR	
Q908	B1BCBL000018	TRANSISTOR	
Q909	B1BABL000016	TRANSISTOR	
Q910	2PB709AR-115	TRANSISTOR	
Q911	2PD601AR-115	TRANSISTOR	
Q912	2SC3311ASTA	TRANSISTOR	
Q913	2SA1309ASTA	TRANSISTOR	
Q1401	2PD601AR-115	TRANSISTOR	
Q1501	2PD601AR-115	TRANSISTOR	
Q1502	2PB709AR-115	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q1504	2PD601AR-115	TRANSISTOR	
Q1505	2PB709AR-115	TRANSISTOR	
Q1511	2PD601AR-115	TRANSISTOR	
Q1512	2PB709AR-115	TRANSISTOR	
Q2301	2PD601AR-115	TRANSISTOR	
Q2301	UNR221600L	TRANSISTOR CT-30WX54J/UJ	
Q2302	2PD601AR-115	TRANSISTOR	
Q2303	UNR211500L	TRANSISTOR	
Q2304	2PD601AR-115	TRANSISTOR	
Q2304	UNR221600L	TRANSISTOR CT-30WX54J/UJ	
Q2305	2PD601AR-115	TRANSISTOR	
Q2306	2PB709AR-115	TRANSISTOR	
Q2307	UNR211500L	TRANSISTOR	
Q2308	2PD601AR-115	TRANSISTOR	
Q2310	2PB709AR-115	TRANSISTOR	
Q2311	2PB709AR-115	TRANSISTOR CT-30WX54J/UJ	
Q2313	UNR221100L	TRANSISTOR CT-30WX54J/UJ	
Q2314	2PD601AR-115	TRANSISTOR	
Q2314	UNR221600L	TRANSISTOR CT-30WX54J/UJ	
Q2317	UNR221600L	TRANSISTOR	
Q2318	UNR221600L	TRANSISTOR	
Q2325	2PD601AR-115	TRANSISTOR	
Q2327	2PD601AR-115	TRANSISTOR	
Q2451	2PD601AR-115	TRANSISTOR	
Q2452	2PD601AR-115	TRANSISTOR	
Q2881	UNR211D00L	TRANSISTOR	
Q2893	UNR211500L	TRANSISTOR CT-30WX54J/UJ	
Q3801	2SA1767Q	TRANSISTOR	
Q3802	2SA1767Q	TRANSISTOR	
Q3803	2SA1767Q	TRANSISTOR	
Q3804	2SC58630QL	TRANSISTOR	
Q3805	2SC58630QL	TRANSISTOR	
Q3806	2SC58630QL	TRANSISTOR	
Q3807	B1BABL000016	TRANSISTOR	
Q3808	2SC2258RL	TRANSISTOR	
Q3809	2PB709AR-115	TRANSISTOR	
Q3810	2PB709AR-115	TRANSISTOR	
Q3811	2PB709AR-115	TRANSISTOR	
Q3812	2PD601AR-115	TRANSISTOR	
Q3813	2PD601AR-115	TRANSISTOR	
Q3814	2PD601AR-115	TRANSISTOR	
RELAYS			
RL801	K6B1AGA00043	RELAY	⚠
RL802	TSE10814	RELAY	⚠
RL803	K6B1AGA00042	RELAY	⚠
RL804	TSEH0034	RELAY	
RESISTORS			
R032	ERJ6GEYJ333V	RES M 33K-J-1/10W	
R041	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R075	ERJ6GEYJ101V	RES M 100-J-1/10W	
R076	ERJ6GEYJ101V	RES M 100-J-1/10W	
R077	ERJ6GEYJ101V	RES M 100-J-1/10W	
R096	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R098	ERJ6GEYJ220V	RES M 22-J-1/10W	
R099	ERJ6GEYJ220V	RES M 22-J-1/10W	
R100	ERJ6GEYJ242V	RES M 2.4K-J-1/10W	
R101	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R102	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R103	ERJ6GEYJ822V	RES M 8.2K-J-1/10W	
R104	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R106	ERJ6GEYJ101V	RES M 100-J-1/10W	
R107	ERJ6GEYJ101V	RES M 100-J-1/10W	
R108	ERJ6GEYJ101V	RES M 100-J-1/10W	
R109	ERJ6GEYJ101V	RES M 100-J-1/10W	
R121	ERDS1VJ680T	RES C 68-J-1/2W	
R121	ERDS2TJ680T	RES C 68-J-1/4W CT-30WX54J/UJ	
R122	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R123	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R124	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R125	ERJ6GEYJ101V	RES M 100-J-1/10W	
R126	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R127	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R129	ERJ6GEYJ101V	RES M 100-J-1/10W CT-30WX54J /UJ	
R451	EROS2THF1201	RES M 1.2K-F-1/4W	
R452	EROS2THF2201	RES M 2.2K-F-1/4W	
R453	ERJ6GEYJ822V	RES M 8.2K-J-1/10W	
R454	ERJ6ENF1602V	RES M 16K-F-1/4W	
R455	ERG2FJ331H	RES M 330-J-2W	
R456	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R457	ERDS1FJ560T	RES C 56-J-1/2W	
R458	ERDS1FJ4R7P	RES C 4.7-J-1/2W	
R459	ERDS1FJ4R7P	RES C 4.7-J-1/2W	
R461	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R462	ERJ6GEYJ563V	RES M 56K-J-1/10W	
R463	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R464	ERDS2TJ102T	RES C 1K-J-1/4W	
R465	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R466	ERDS1FJ4R7P	RES C 4.7-J-1/2W	
R467	ERDS1FJ4R7P	RES C 4.7-J-1/2W	
R468	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R469	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R470	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R471	ERJ6ENF1802V	RES M 18K-F-1/10W	
R472	ERJ6ENF1501V	RES M 1.5K-F-1/10W	
R473	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R474	ERJ6GEYJ563V	RES M 56K-J-1/10W	
R475	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R476	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R501	ERDS2TJ104T	RES C 100K-J-1/4W	
R502	ERG2FJ470H	RES M 47-J-2W	
R503	ERG3FJ221H	RES M 220-J-3W	
R504	ERDS2TJ680T	RES C 68-J-1/4W	
R505	ERG1SJ102P	RES M 1K-J-1W	
R507	ERX2FJR22H	RES M .22-J-2W	
R510	ERG3FJ391H	RES M 391-J-3W	
R512	ERDS2TJ102T	RES C 1K-J-1/4W	
R513	ERDS2TJ471T	RES C 470-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R514	EROS2THF2552	RES M 25.5K-F-1/4W	⚠
R515	EROS2THF2552	RES M 25.5K-F-1/4W	⚠
R516	ERDS2TJ101T	RES C 100-J-1/4W	⚠
R517	ERC14GK103V	RES M 10K-J-1W	
R518	ERDS2TJ103T	RES C 10K-J-1/4W	
R519	ERDS2TJ221T	RES C 220-J-1/4W	
R520	EROS2THF2552	RES M 25.5K-F-1/4W	⚠
R521	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R522	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R523	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R524	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R525	ERJ6GEYJ182V	RES M 1.8K-J-1/10W	
R526	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R527	ERJ6GEYJ222V	RES M 25.5K-F-1/4W	
R528	ERDS2TJ473T	RES C 47K-J-1/4W	
R529	ERDS2TJ473T	RES C 47K-J-1/4W	
R530	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R531	ERDS2TJ221T	RES C 220-J-1/4W	
R533	ERDS2TJ102T	RES C 1K-J-1/4W	
R534	ERDS2TJ152T	RES C 1.5K-J-1/4W	
R535	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R536	ERDS2TJ221T	RES C 220-J-1/4W	
R537	ERDS2TJ103T	RES C 10K-J-1/4W	
R538	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R540	ERC14GK334V	RES C 330K-K-1/4W	
R541	ERDS2TJ101T	RES C 100-J-1/4W	
R542	ERDS2TJ103T	RES C 10K-J-1/4W	
R543	ERDS2TJ103T	RES C 10K-J-1/4W	
R547	ERG1SJ332P	RES M 3300-J-1W	
R548	ERG3FJ103H	RES M 10K-J-3W	
R549	ERG3FJ102H	RES M 1K-J-3W	
R550	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R551	ERC14GK184V	RES C 180K-K-1/4	
R552	ERC14GK184V	RES C 180K-K-1/4	
R553	ERDS2TJ101T	RES C 100-J-1/4W	
R557	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R558	ERDS2TJ473T	RES C 47K-J-1/4W	
R559	ERC12GK104V	RES C 100K-K-1/2W	
R560	ERC12GK225V	RES C 2.2M-K-1/2W	
R560	ERDS2TJ102T	RES C 1K-J-1/4W	
R561	EROS2THF2552	RES M 25.5K-F-1/4W	⚠
R562	ERDS2TJ153T	RES C 15K-J-1/4W	
R563	ERDS2TJ102T	RES C 1K-J-1/4W	
R563	ERG2FJ123H	RES M 12K-J-2W	
R564	ERDS2TJ101T	RES C 100-J-1/4W	
R565	ERDS2TJ560T	RES C 56-J-1/4W	
R568	ERDS2TJ473T	RES C 47K-J-1/4W	
R568	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R569	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R570	ERDS2TJ103T	RES C 10K-J-1/4W	
R572	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R573	ERC14GK101V	RES C 100-K-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R574	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R575	**ERJ6GEYJ102V**	**RES M 1K-J-1/10W**	
R576	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R577	**EROS2THF2703**	**RES M 270K-F-1/4W**	
R578	**ERJ6GEYJ331V**	**RES M 330-J-1/10W**	
R579	**ERDS2TJ392T**	**RES C 3.9K-J-1/4W**	
R580	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R581	**ERJ6GEYJ101V**	**RES M 100-J-1/10W**	
R582	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R583	**ERJ6ENF1501V**	**RES M 1.5K-F-1/10W**	
R584	**ERJ6ENF2201V**	**RES M 2.2K-F-1/10W**	
R586	**EROS2THF2003**	**RES M 200K-F-1/4W**	
R587	**ERJ6GEYJ681V**	**RES M 680-J-1/10W**	
R589	**ERJ6GEYJ392V**	**RES M 3.9K-J-1/10W**	
R590	**ERJ6GEYJ331V**	**RES M 330-J-1/10W**	
R591	**ERDS2TJ100T**	**RES C 10-J-1/4W**	
R592	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R593	**ERJ6GEYJ102V**	**RES M 1K-J-1/10W**	
R594	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R595	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R597	**ERF5AJ680**	**RES W 68-J-5W**	
R598	**ERX12SJR22P**	**RES M .22-J-1/2W**	
R599	**ERX12SZJR15P**	**RES M .15-J-1/2W**	
R701	**ERQ14AJ220P**	**RES F 22-J-1/4W**	
R702	**ERJ6GEYJ473V**	**RES M 47K-J-1/10W**	
R703	**ERJ6GEYJ223V**	**RES M 22K-J-1/10W**	
R704	**ERJ6GEYJ184V**	**RES M 180K-J-1/10W**	
R705	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R718	**ERG2FJ223H**	**RESM 22K-J-2W**	
R732	**EROS2THF6342**	**RES M 63.4K-F-1/4W**	
R733	**EROS2THF6342**	**RES M 63.4K-F-1/4W**	
R734	**EROS2THF1542**	**RES M 15.4KF-1/4W**	
R735	**ERDS1FJ220P**	**RES C 22-F-1/2W**	
R736	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R784	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R785	**ERJ6GEYJ101V**	**RES M 100-J-1/10W**	
R786	**ERJ6GEYJ101V**	**RES M 100-J-1/10W**	
R787	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R800	**ERU5TCK1R5T**	**RES F 1.5-K-5W**	⚠
R801	**ERC14GK824V**	**RES C 820K-K-1/4W**	
R802	**ERDS2TJ102T**	**RES C 1K-J-1/4W**	
R803	**ERDS2TJ680T**	**RES C 68-J-1/4W**	
R804	**ERDS2TJ331T**	**RES C 330-J-1/4W**	
R805	**ERDS2TJ473T**	**RES C 47K-J-1/4W**	
R806	**ERDS2TJ473T**	**RES C 47K-J-1/4W**	
R807	**ERDS2TJ820T**	**RES C 82-J-1/4W**	
R808	**ERDS2TJ680T**	**RES C 68-J-1/4W**	
R809	**ERDS2TJ472T**	**RES C 4.7K-J-1/4W**	
R810	**ERJ6GEYJ473V**	**RES M 47K-J-1/10W**	
R811	**ERDS2TJ472T**	**RES C 4.7K-J-1/4W**	
R812	**ERDS2TJ473T**	**RES C 47K-J-1/4W**	
R814	**ERJ6GEYJ473V**	**RES M 47K-J-1/10W**	
R815	**ERJ6GEYJ223V**	**RES M 22K-J-1/10W**	
R815	**ERJ6GEYJ333V**	**RES M 33K-J-1/10W**	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
R816	ERD75TAJ825	RES C 8.2MEG-J-3/4W	⚠
R817	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R818	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R819	ERDS2TJ391T	RES C 390-J-1/4W	
R820	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R830	ERDS1FJ330T	RES C 30-J-1/2W	
R831	ERJ6GEYJ101V	RES M 100-J-1/10W	
R832	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R833	ERJ6GEYJ470V	RES M 47-J-1/10W	
R834	ERDS2TJ473T	RES C 47K-J-1/4W	
R835	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R840	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R841	ERQ12HKR22P	RES F .22-K-1/2W	
R842	ERQ12HKR22P	RES F .22-K-1/2W	
R844	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R845	ERDS1FJ222T	RES C 2200-J-1/2W	
R846	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R847	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R848	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R849	ERDS2TJ223T	RES C 22K-J-1/4W	
R849	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R850	ERDS2TJ152T	RES C 1.5K-J-1/4W	
R851	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R852	ER050PHF2702	RES M 27-F-1/2W	
R853	EROS2THF3601	RES M 3.6K-F-1/4W	
R855	ERDS2TJ683T	RES C 68K-J-1/4W	
R856	ERJ6GEYJ123V	RES M 12K-J-1/10W	
R857	ERX1SJ1R2P	RES M 1.2-J-1W	
R858	ERX1SJ1R2P	RES M 1.2-J-1W	
R859	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R860	ERG1SJ102P	RES M 1K-J-1W	
R861	ERX12SJR27P	RES M .27-J-1/2W	
R862	ERX12SJR27P	RES M .27-J-1/2W	
R863	ERX12SJR27P	RES M .27-J-1/2W	
R864	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R865	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R866	ERJ6GEYJ561V	RES M 560-J-1/10W	
R867	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R868	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R869	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R870	ERDS2TJ102T	RES C 1K-J-1/4W	
R872	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R873	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R874	ERDS1FJ390T	RES C 39-J-1/2W	
R875	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R876	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R878	ERDS2TJ223T	RES C 22K-J-1/4W	
R879	ERJ6ENF4021V	RES M 4.02K-F-1/10W	
R884	ERX1SJ1R8P	RES M 1.8-J-1W	
R886	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R886	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R887	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R888	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R889	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
R890	ERDS2TJ152T	RES C 1.5K-J-1/4W	
R891	ERG1SJ823P	RES M 82K-J-1W	
R892	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R893	ERDS1FJ332T	RES C 3.3K-F-1/2W	
R894	ERJ6ENF1001V	RES M 1K-F-1/10W	
R896	ERDS1TJ334T	RES C 330K-J-1/2W	
R898	ERJ6GEYJ563V	RES M 56K-J-1/10W	
R899	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R900	ERJ6GEYJ101V	RES M 100-J-1/10W	
R901	ERJ6GEYJ101V	RES M 100-J-1/10W	
R902	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R903	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R904	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R906	ERJ6GEYJ333V	RES M 33K-J-1/10W	
R907	ERJ6GEYJ681V	RES M 680-J-1/10W	
R908	ERJ6GEYJ151V	RES M 150-J-1/10W	
R912	ERDS2TJ681T	RES C 680-J-1/4W	
R915	ERDS2TJ221T	RES C 220-J-1/4W	
R916	ERDS2TJ221T	RES C 220-J-1/4W	
R917	ERQ14AJ100P	RES F 10-J-1/4W	
R924	ERDS2TJ561T	RES C 560-J-1/4W	
R925	ERDS2TJ683T	RES C 68K-J-1/4W	
R926	ERDS2TJ683T	RES C 68K-J-1/4W	
R927	ERDS2TJ561T	RES C 560-J-1/4W	
R928	ERQ12AJ151P	RES F 150-J-1/2W	
R929	ERQ14AJ2R2P	RES F 2.2-J-1/4W	
R930	ERDS2TJ820T	RES C 82-J-1/4W	
R931	ERQ14AJ2R2P	RES F 2.2-J-1/4W	
R932	ERQ14AJ3R3P	RES F 3.3-J-1/4W	
R933	ERQ14AJ3R3P	RES F 3.3-J-1/4W	
R934	ERQ1CJP331S	RES F 330-J-1W	
R935	ERG2FJ391H	RES M 390-J-2W	
R937	ERJ6GEYJ121V	RES M 120-J-1/10W	
R940	ERDS2TJ102T	RES C 1K-J-1/4W	
R941	ERDS2TJ102T	RES C 1K-J-1/4W	
R942	ERG2FJ391H	RES M 390-J-2W	
R1051	ERJ6ENF1002V	RES M 10K-F-1/10W	
R1052	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1053	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1054	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R1055	ERJ6GEYJ512V	RES M 5.1K-J-1/10W	
R1056	ERJ6GEYJ912V	RES M 9.1K-J-1/10W	
R1057	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R1058	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1059	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1060	ERJ6GEYJ470V	RES M 47-J-1/10W	
R1061	ERJ6GEYJ101V	RES M 100-J-1/10W	
R1062	ERJ6GEYJ182V	RES M 1.8K-J-1/10W	
R1063	ERJ6GEYJ133V	RES M 13K-J-1/10	
R1064	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1401	ERJ6ENF3902V	RES M 39K-F-1/10W	
R1402	ERJ6ENF3012V	RES M 30.1K-F-1/16W	
R1403	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R1404	ERJ6ENF8201V	RES M 8.2K-F-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R1405	ERJ6ENF9101V	RES M 9.1K-F-1/10W	
R1406	ERJ6ENF1691V	RES M 1.69K-F-1/10W	
R1407	ERJ6ENF8450V	RES M 845-F-1/10W	
R1408	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R1409	ERDS2TJ473T	RES C 47K-J-1/4W	
R1410	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R1411	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1507	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R1508	ERJ6ENF1002V	RES M 10K-F-1/10W	
R1512	ERJ6ENF1002V	RES M 10K-F-1/10W	
R1514	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1515	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R1518	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1522	ERJ6GEYJ330V	RES M 33-J-1/10W	
R1523	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1526	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1527	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R1529	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R1530	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1531	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1534	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1536	ERJ6ENF1692V	RES M 16.9K-F-1/10W	
R1537	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1569	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R1583	ERJ6ENF5761V	RES M 5.76K-F-1/10W	
R1585	ERJ6ENF3651V	RES M 3.65K-F-1/16W	
R1587	ERJ6ENF2202V	RES M 22K-F-1/10W	
R1588	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R1591	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1592	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R1593	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1599	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2203	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R2206	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2207	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2221	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2301	ERJ6ENF1100V	RES M 110-F-1/10W	
R2302	ERJ6ENF1202V	RES.M 1.2K-F-1/10W CT-30WX54J /UJ	
R2302	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2303	ERJ6ENF1100V	RES M 110-F-1/10W	
R2304	ERJ6ENF1202V	RES.M 1.2K-F-1/10W CT-30WX54J /UJ	
R2304	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2307	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2308	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2309	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2309	ERJ6GEYJ223V	RES M 22K-J-1/10W CT-30WX54J /UJ	
R2310	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2312	ERJ6ENF1303V	RES M 130K-F-1/10W	
R2313	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2314	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2315	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2316	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2317	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2318	ERJ6GEYJ101V	RES M 100-J-1/10W	

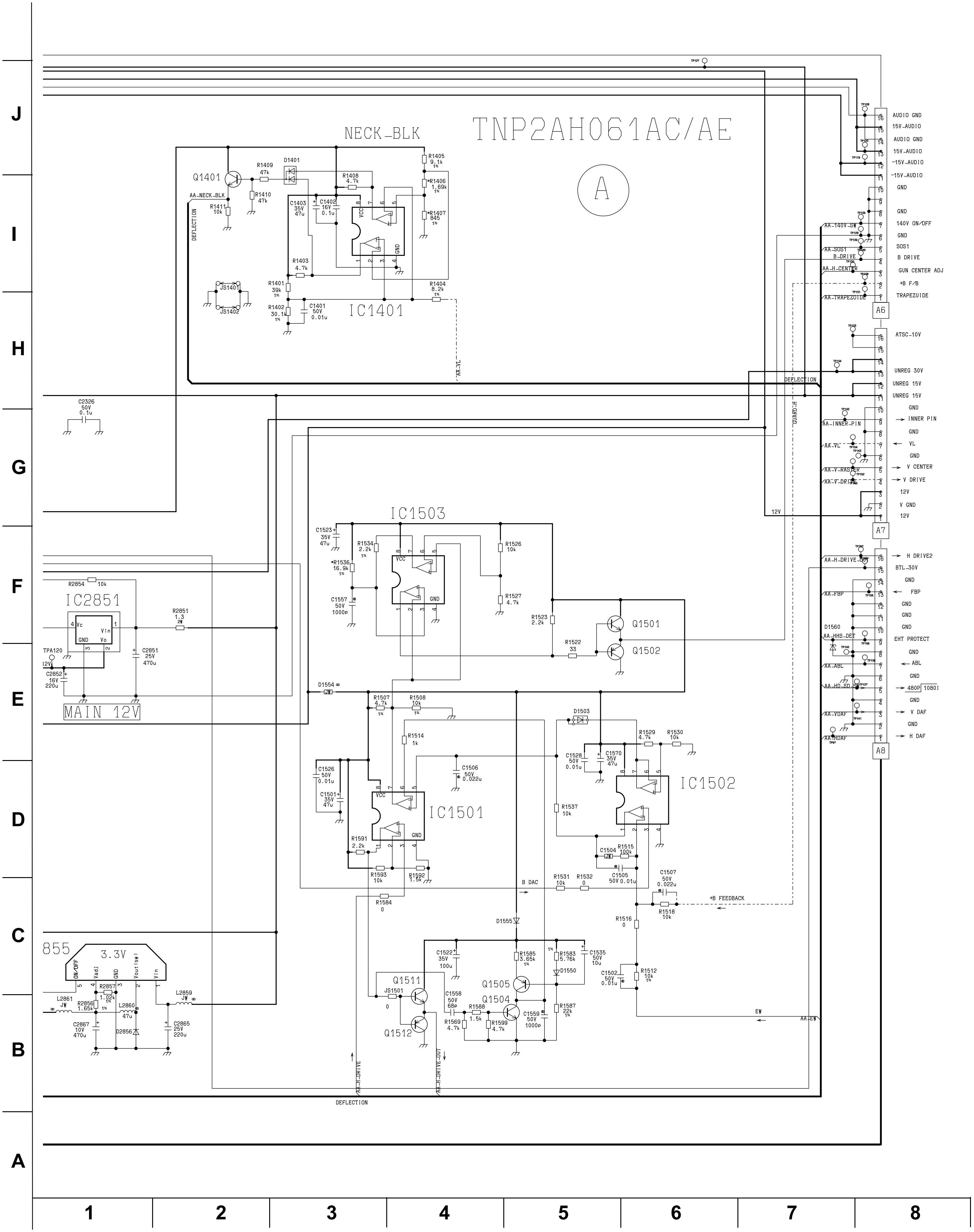
Ref. No.	Part No.	Part Name & Description	Remarks
R2319	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2320	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2322	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2324	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2325	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2326	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2328	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2329	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2331	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2332	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2332	ERJ6GEYJ392V	RES M 3.9K-J-1/10W CT-30WX54J /UJ	
R2333	ERJ6GEYJ183V	RES M 18K-J-1/10W CT-30WX54J /UJ	
R2334	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2335	ERJ6GEYJ271V	RES M 270-J-1/10W CT-30WX54J /UJ	
R2336	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R2337	ERJ6GEYJ271V	RES M 270-J-1/10W	
R2340	ERJ6GEYJ104V	RES M 100K-J-1/10W CT-30WX54J /UJ	
R2342	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2344	ERJ6GEYJ104V	RES M 100K-J-1/10W CT-30WX54J /UJ	
R2345	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2347	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2351	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2352	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2353	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R2354	ERJ6GEYJ432V	RES M 4.3K-J-1/10W	
R2355	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2356	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2357	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R2358	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R2359	ERJ6GEYJ432V	RES M 4.3K-J-1/10W	
R2360	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2361	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2362	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2363	ERDS2TJ102T	RES C 1K-J-1/4W	
R2365	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2366	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2367	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2368	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2372	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2373	ERJ6GEYJ333V	RES M 33K-J-1/10W	
R2374	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2375	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R2379	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2384	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2385	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2396	ERDS2TJ102T	RES C 1K-J-1/4W CT-30WX54J/UJ	
R2404	ERJ6GEYJ152V	RES M 1.5K-J-1/10W CT-30WX54J /UJ	
R2422	ERJ6GEYJ683V	RES M 68K-J-1/10W CT-30WX54J /UJ	
R2451	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2452	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2453	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2454	ERJ6GEYJ471V	RES M 470-J-1/10W	
R2456	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2457	ERJ6GEYJ471V	RES M 470-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2851	ERX2SJS1R3H	RES M 1.3-J-2W	
R2852	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2853	ERJ6ENF1911V	RES M 1.91K-F-1/10W	
R2854	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2856	ERJ6ENF1651V	RES M 1.65K-F-1/10W	
R2856	ERJ6ENF1691V	RES M 1.69K-F-1/10W CT-30WX54J/UJ	
R2857	ERJ6ENF1021V	RES M 1.02K-F-1/10W	
R2858	ERJ6ENF1541V	RES M 1.54K-F-1/10W	
R2859	ERJ6ENF1471V	RES M 1.47K-F-1/10W	
R2860	ERJ6ENF4300V	RES M 430-F-1/10W	
R2861	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2862	ERJ6ENF3001V	RES M 3K-F-1/10W	
R2863	ERJ6ENF1001V	RES M 1K-F-1/10W CT-30WX54J /UJ	
R2863	ERJ6ENF9760V	RES M 976-F-1/10W	
R2883	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R2892	ERJ6ENF1002V	RES M 10K-F-1/10W CT-30WX54J /UJ	
R3301	ERJ6GEYJ184V	RES M 180K-J-1/10W CT-30WX54J /UJ	
R3302	ERJ6GEYJ184V	RES M 180K-J-1/10W CT-30WX54J /UJ	
R3303	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3304	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3305	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3306	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3307	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3308	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3309	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3310	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3311	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3312	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3313	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3314	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3315	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3316	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3317	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3318	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3319	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3320	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3321	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3322	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3323	ERJ6ENF75R0V	RES M 75.0-F-1/10W CT-30WX54J /UJ	
R3324	ERJ6GEYJ184V	RES M 180K-J-1/10W CT-30WX54J /UJ	
R3326	ERJ6GEYJ184V	RES M 180K-J-1/10W CT-30WX54J /UJ	
R3327	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3328	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3403	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R3404	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R3801	ERJ6GEYJ560V	RES M 56-J-1/10W	
R3802	ERJ6GEYJ560V	RES M 56-J-1/10W	
R3803	ERJ6GEYJ560V	RES M 56-J-1/10W	
R3804	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R3805	ERDS2TJ471T	RES C 470-J-1/4W	
R3806	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3807	EROS2THF3013	RES M 301K-F-1/4W	
R3808	ERJ6ENF1402V	RES M 14K-F-1/10W	
R3809	ERJ6GEYJ330V	RES M 33-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R3810	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3811	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R3812	ERJ6GEYJ330V	RES M 33-J-1/10W	
R3813	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3814	EROS2THF3013	RES M 301K-F-1/4W	
R3815	ERJ6ENF1402V	RES M 14K-F-1/10W	
R3816	ERJ6GEYJ330V	RES M 33-J-1/10W	
R3817	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3818	ERDS2TJ224T	RES C 220K-J-1/4W	
R3819	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3820	ERDS2TJ224T	RES C 220K-J-1/4W	
R3821	ERDS2TJ104T	RES C 100K-J-1/4W	
R3822	EROS2THF3013	RES M 301K-F-1/4W	
R3823	ERDS2TJ224T	RES C 220K-J-1/4W	
R3824	ERC12GK101V	RES C 100-K-1/2W	
R3825	ERC12GK101V	RES C 100-K-1/2W	
R3826	ERC12GK101V	RES C 100-K-1/2W	
R3827	ERJ6ENF1402V	RES M 14K-F-1/10W	
R3828	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R3829	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R3830	ERG1SJ682P	RES M 6.8K-J-1W	
R3831	ERG2FJ333H	RES M 33K-J-2W	
R3832	ERDS2TJ151T	RES C 150-J-1/4W	
R3833	ERDS2TJ151T	RES C 150-J-1/4W	
R3834	ERDS2TJ151T	RES C 150-J-1/4W	
R3836	ERG2FJ101H	RES M 100-J-2W	
R3843	ERDS2TJ224T	RES C 220K-J-1/4W	
R3844	EROS2THF8871	RES M 8.87K-F-1/4W	
R3845	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R3846	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R3847	ERJ6ENF33R0V	RES M 33.0K-F-1/10W	
R3848	ERJ6ENF2200V	RES M 220-F-1/10W	
R3849	ERJ6ENF2200V	RES M 220-F-1/10W	
R3850	ERJ6ENF2200V	RES M 220-F-1/10W	
R3851	ERJ6GEYJ391V	RES M 390-J-1/10W	
R3852	ERJ6GEYJ391V	RES M 390-J-1/10W	
R3853	ERJ6GEYJ391V	RES M 390-J-1/10W	
R3857	ERG2FJ393H	RES M 39K-J-2W	
R5501	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R5502	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R5504	ERJ6GEYJ101V	RES M 100-J-1/10W	
R5505	ERJ6GEYJ101V	RES M 100-J-1/10W	
R5507	ERJ6GEYJ101V	RES M 100-J-1/10W	
R5508	ERJ6GEYJ101V	RES M 100-J-1/10W	
R5511	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R5801	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R5802	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R5804	ERG1SJ470P	RES M 47-J-1W	
R5805	ERDS1FJ1R0T	RES C 1.0-J-1/2W	
R5806	ERJ6ENF5602V	RES M 56K-F-1/10W	
R5807	ERJ6ENF2001V	RES M 2K-F-1/10W	
R5808	ERDS1FJ391T	RES C 390-J-1/2W	
R5809	ERX12SJR68P	RES M .68-J-1/2W	
R5810	ERX12SJR47P	RES M .47-J-1/2W	

Ref. No.	Part No.	Part Name & Description	Remarks
R5811	ERDS2TJ102T	RES C 1K-J-1/4W	
R5812	ERDS2TJ822T	RES C 8.2K-J-1/4W	
R5813	ERDS1FJ391T	RES C 390-J-1/2W	
R5815	ERJ6GEYJ103V	RES M 10K-J-1/10W	
SWITCHES			
S803	N9ZZ00000132	SPARK GAP	⚠
S804	N9ZZ00000132	SPARK GAP	⚠
SW001	EVQPBD05R	SWITCH	
SW002	EVQPBD05R	SWITCH	
SW003	EVQPBD05R	SWITCH	
SW004	EVQPBD05R	SWITCH	
SW005	EVQPBD05R	SWITCH	
SW006	EVQPBD05R	SWITCH	
SW007	EVQPBD05R	SWITCH	
SW008	EVQPBD05R	SWITCH	
TRANSFORMERS			
T501	ETH19K207AZ	TRANSFORMER	
T550	G4E1A0000011	TRANSFORMER	
T551	ZTFN95004A	TRANSFORMER FLYBACK	⚠
T553	ETS28AU2K9AD	TRANSFORMER	
T561	ETF18L101A	TRANSFORMER	
T801	ETS42AU185AD	TRANSFORMER	⚠
T802	ETP28KBZA1ZG	TRANSFORMER	⚠
OTHERS			
TU001	ENGF6302GF	MAIN TUNER	⚠
TU002	ENG36A08GF	SUB TUNER	⚠
M001	W76MAG185X	CRT 30”	⚠
JK3804A	K3B10CA00041	CRT SOCKET	
M002	KDY4YHG67F	DEFLECTION YOKE	⚠
M003	TLCA006	CONVERGENCE YOKE	
M004	TXF3A01HE4	GROUND CABLE	
M005	TSP2AA035	COIL DEGAUSSING	⚠
M006	TSP2AF007	COIL ROTATION	
M007	EASG12S503A2	WOOFER SPEAKER	
M008	EASG7DH08E2	TWEETER	
M009	TKP2AA1311S	SPEAKER BOX BASE	
M010	TXFKP10JSER	SPEAKER BOX COVER	
M011	TBX2AA0241	DISC BUTTON	
M012	TBX2AA0251A	4-KEY BUTTON	
M013	TKX2AA0201	LED GUIDE	
M014	TKX2AA0211	IR GUIDE	
M015	TEK6935	DOOR CATCH	
M017	TKP2AA1292S	DOOR PANEL CT-30WX54J/UJ	
M018	TKP2AA1293S	FRONT DOOR CT-30WC14J/UJ	
M019	TSM2AA001	MAGNET PERMALLOY	
M020	TSN63115-4	MAGNET PURITY	
M021	TSX2AA0411	LINE CORD	⚠
M022	TXFKP09JSER	A/V BRACKET CT-30WC14J/UJ	
M023	TXFKP11JSER	A/V BRACKET CT-30WX54J/UJ	
M024	TXFKU01HE4S	BACK CABINET	

Ref. No.	Part No.	Part Name & Description	Remarks
M025	TXFKY01HE4S	FRONT CABINET CT-30WX54J/UJ	
M026	TXFKY01HQ4S	FRONT CABINET CT-30WC14J/UJ	
RM001	PNA4701M05TV	REMOTE CONTROL RECEPTOR	
JK3301	TJB2AA0521	TERMINAL A/V CT-30WX54J/UJ	
JK3401	TJB2AA0511	TERMINAL A/V	
JK3301A	TJB2AA0522	TERMINAL A/V CT-30WC14J/UJ	
JK3302A	TJB2AA0532	TERMINAL A/V CT-30WX54J/UJ	
JK3302B	TJB2AA0533	TERMINAL A/V CT-30WC14J/UJ	
ACCESORIES			
M027	TQB2AA0496-1	OWNERS MANUAL	
M028	EUR7603ZF0	TRANSMITTER REMOTE CONTROL	
M029	UR76EC0303E	REMOTE CONTROL BATTERY COVER	

TNP2AH061AC/AE
NECK_BLK
A
Q1401
R1409 47k
D1401
R1408 4.7k
R1405 9.1k 1%
*R1406 1.69k 1%
*R1407 845 1%
R1410 47k
R1411 10k
AA-NECK-BLK
DEFLECTION
C1403 35V 47u
C1402 16V 0.1u
VCC
GND
R1403 4.7k
R1401 39k 1%
R1402 30.1k 1%
C1401 50V 0.01u
R1404 8.2k 1%
IC1401
JS1401
JS1402
AA-VL
TP127
TP128
TP118
AUDIO GND
15V-AUDIO
AUDIO GND
15V-AUDIO
-15V-AUDIO
-15V-AUDIO
GND
GND
140V ON/OFF
GND
SOS1
B DRIVE
GUN CENTER ADJ
+B F/B
TRAPEZUIDE
AA-140V-SW
AA-SOS1
B-DRIVE
AA-H-CENTER
AA-TRAPEZOIDE
A6
ATSC-10V
UNREG 30V
UNREG 15V
UNREG 15V
GND
INNER PIN
GND
VL
GND
V CENTER
V DRIVE
12V
V GND
12V
AA-INNER-PIN
AA-VL
AA-V-RASTER
AA-V-DRIVE
DEFLECTION
GUARD-H
12V
A7
C2326 50V 0.1u
IC1503
C1523 35V 47u
R1534 2.2k 1%
*R1536 16.9k 1%
C1557 50V 1000p
R1526 10k
R1527 4.7k
R1523 2.2k
Q1501
Q1502
R1522 33
H DRIVE2
BTL-30V
GND
FBP
GND
GND
GND
EHT PROTECT
GND
ABL
GND
480P 1080I
GND
V DAF
GND
H DAF
AA-H-DRIVE-OUT
AA-FBP
D1560
AA-HHS-DET
AA-ABL
AA-HD-SD
AA-VDAF
AA-HDAF
A8
R2854 10k
IC2851
Vc
Vin
GND
Vo
R2851 1.3 2W
C2851 25V 470u
TPA120
12V
C2852 16V 220u
MAIN 12V
D1554
R1507 4.7k 1%
R1508 10k 1%
R1514 1k
C1506 50V 0.022u
C1526 50V 0.01u
C1501 35V 47u
IC1501
R1591 2.2k
R1593 10k
R1592 1.5k
D1503
R1529 4.7k
R1530 10k
C1528 50V 0.01u
C1570 35V 47u
IC1502
R1537 10k
C1504
R1515 100k
C1505 50V 0.01u
B DAC
R1531 10k
R1532 0
C1507 50V 0.022u
R1584 0
+B FEEDBACK
R1518 10k
R1516 0
D1555
855
3.3V
ON/OFF
Vadj
GND
Vout(sw)
Vin
R2857 1.02k 1%
R2856 1.65k 1%
L2861 JW
L2860 47u
L2859 JW
C2867 10V 470u
D2856
C2865 25V 220u
C1522 35V 100u
R1585 3.65k 1%
R1583 5.76k 1%
C1535 50V 10u
D1550
Q1511
JS1501 0
C1558 50V 68p
Q1505
Q1504
C1502 50V 0.01u
R1512 10k 1%
R1588 1.5k
R1569 4.7k
R1599 4.7k
C1559 50V 1000p
R1587 22k 1%
Q1512
EW
AA-EW
AA-H-DRIVE
AA-H-DRIVE-OUT
DEFLECTION
J
I
H
G
F
E
D
C
B
A
1
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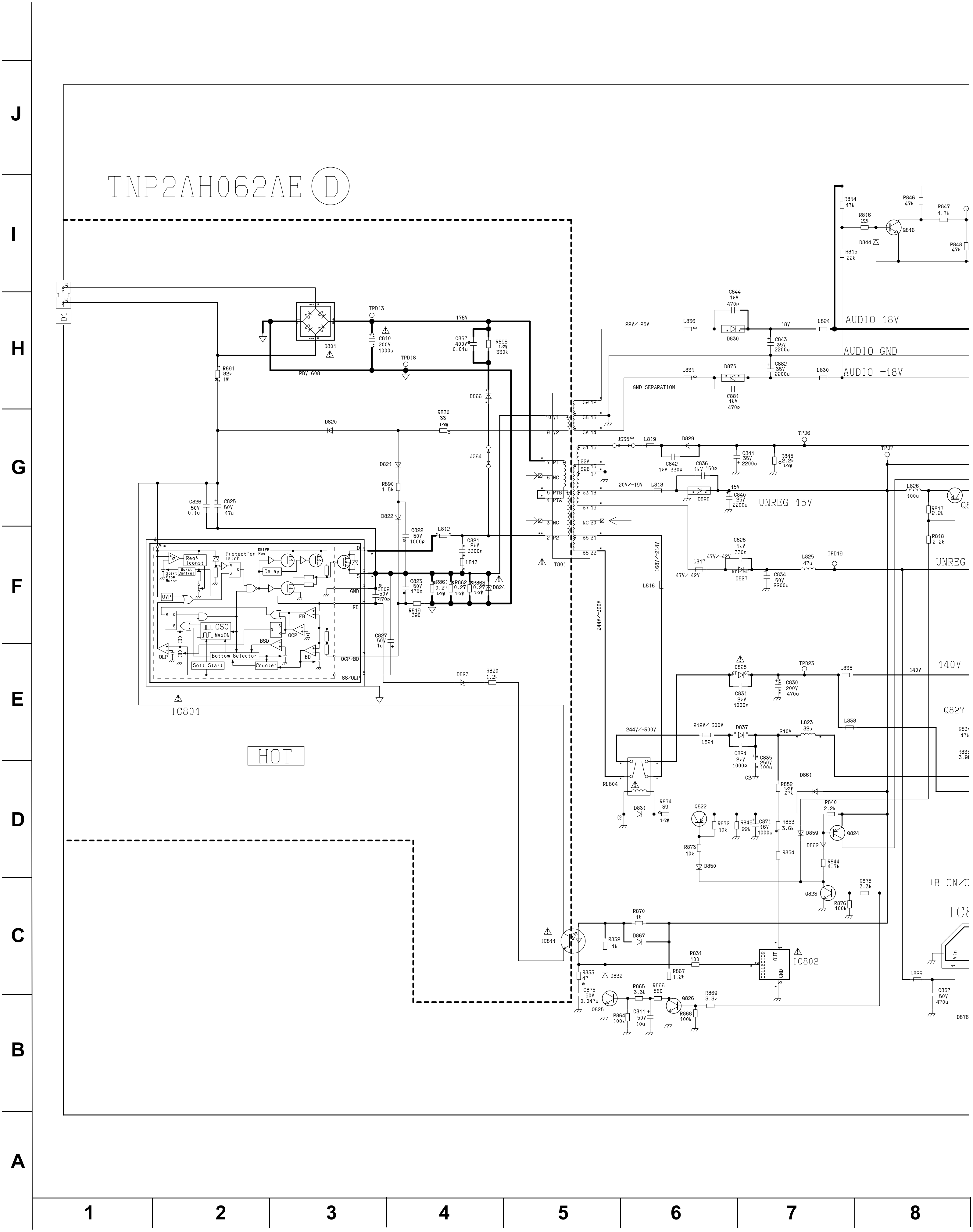
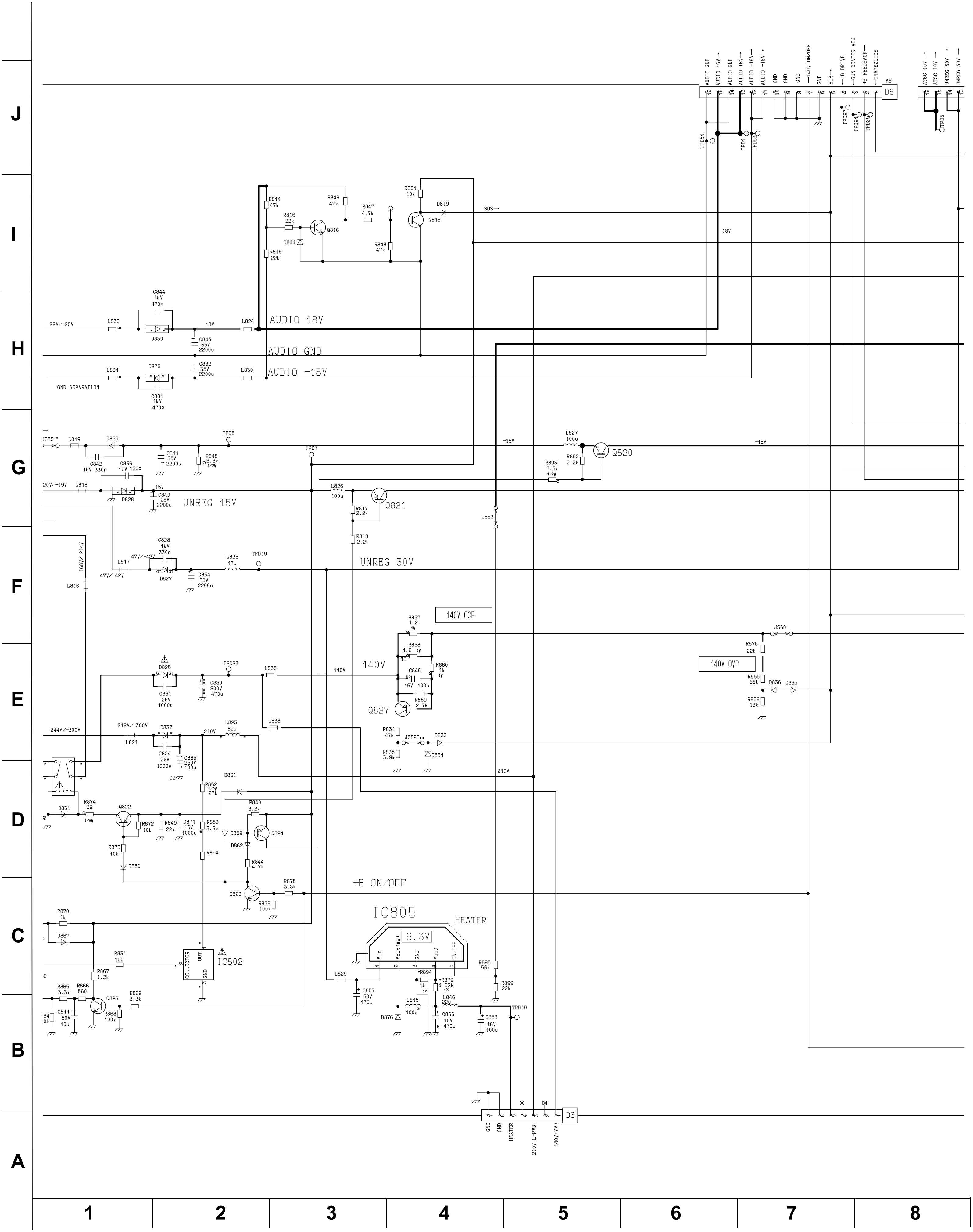
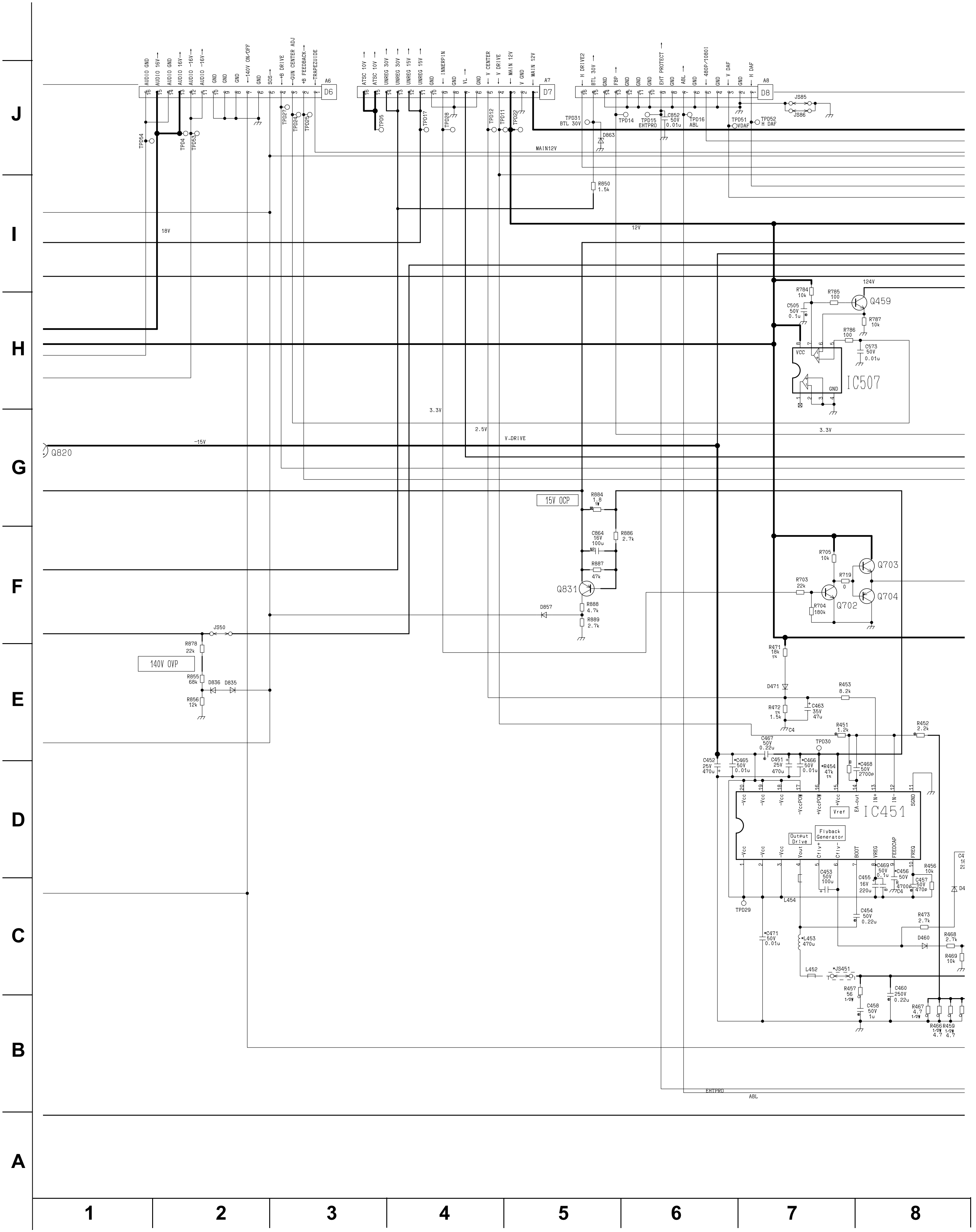
5
6
7
8


TNP2AH062AE (D)
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
D1
D801
RBV-608
TPD13
TPD18
178V
C810 200V 1000u
C867 400V 0.01u
R896 1/2W 330k
R891 82k 1W
D866
JS64
D820
R830 33 1/2W
D821
R890 1.5k
D822
C822 50V 1000p
L812
C821 2kV 3300p
L813
C826 50V 0.1u
C825 50V 47u
C823 50V 470p
C809 50V 470p
R861 0.27 1/2W
R862 0.27 1/2W
R863 0.27 1/2W
D824
R819 390
C827 50V 1u
Vcc
Reg& Iconst
Protection latch
DRIVE Reg
Start Stop Burst
Burst Control
Delay
OVP
OSC
MaxON
FB
OCP
BSD
BD
OLP
Bottom Selector
Soft Start
Counter
D
S
GND
FB
OCP/BD
SS/OLP
IC801
D823
R820 1.2k
HOT
T801
P1
NC
PTB
PTA
NC
P2
V1
V2
S9
S8
SA
S1
S2A
S2B
S3
S7
NC
S5
S6
22V/-25V
L836
C844 1kV 470p
D830
18V
L824
AUDIO 18V
C843 35V 2200u
AUDIO GND
L831
D875
C881 1kV 470p
C882 35V 2200u
L830
AUDIO -18V
GND SEPARATION
JS35
L819
D829
TPD6
C842 1kV 330p
C841 35V 2200u
R845 2.2k 1/2W
C836 1kV 150p
TPD7
20V/-19V
L818
15V
D828
C840 25V 2200u
UNREG 15V
L826 100u
R817 2.2k
R818 2.2k
C828 1kV 330p
47V/-42V
L817
D827
C834 50V 2200u
L825 47u
TPD19
UNREG
168V/-214V
L816
244V/-300V
D825
C831 2kV 1000p
C830 200V 470u
TPD23
L835
140V
Q827
L838
R834 47k
R835 3.9k
212V/-300V
L821
D837
C824 2kV 1000p
C835 250V 100u
210V
L823 82u
RL804
D831
R874 39 1/2W
Q822
R872 10k
R849 22k
C871 16V 1000u
R852 1/2W 27k
R853 3.6k
D861
R840 2.2k
Q824
D859
D862
R844 4.7k
R873 10k
D850
R854
Q823
R875 3.3k
R876 100k
+B ON/O
IC8
R814 47k
R816 22k
R846 47k
R847 4.7k
Q816
D844
R815 22k
R848 47k
IC811
R870 1k
D867
R832 1k
R831 100
IC802
COLLECTOR
OUT
GND
R833 47
C875 50V 0.047u
D832
Q825
R865 3.3k
R866 560
R867 1.2k
Q826
R869 3.3k
R864 100k
C811 50V 10u
R868 100k
L829
C857 50V 470u
D876
Vin


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
AUDIO GND
AUDIO 16V
AUDIO GND
AUDIO 16V
AUDIO -16V
AUDIO -16V
GND
GND
GND
140V ON/OFF
GND
SOS
+B DRIVE
GUN CENTER ADJ
+B FEEDBACK
TRAPEZOIDE
A6
D6
ATSC 10V
ATSC 10V
UNREG 30V
UNREG 30V
TPD54
TPD4
TPD53
TPD27
TPD24
TPD25
TPD5
R814 47k
R846 47k
R847 4.7k
R851 10k
D819
SOS
R816 22k
Q816
Q815
D844
R848 47k
R815 22k
18V
C844 1kV 470p
22V/-25V
L836
D830
18V
L824
AUDIO 18V
C843 35V 2200u
AUDIO GND
L831
D875
C882 35V 2200u
L830
AUDIO -18V
GND SEPARATION
C881 1kV 470p
JS35
L819
D829
TPD6
TPD7
-15V
L827 100u
Q820
-15V
C841 35V 2200u
R845 2.2k 1/2W
C842 1kV 330p
C836 1kV 150p
R893 3.3k 1/2W
R892 2.2k
20V/-19V
L818
D828
15V
C840 25V 2200u
UNREG 15V
L826 100u
Q821
R817 2.2k
JS53
R818 2.2k
168V/-214V
C828 1kV 330p
47V/-42V
L817
47V/-42V
D827
C834 50V 2200u
L825 47u
TPD19
UNREG 30V
L816
R857 1.2 1W
140V OCP
R858 1.2 1W
R860 1k 1W
JS50
R878 22k
140V OVP
D825
TPD23
L835
140V
140V
C846 16V 100u
C830 200V 470u
C831 2kV 1000p
R859 2.7k
Q827
R855 68k
D836
D835
R856 12k
244V/-300V
212V/-300V
D837
L823 82u
L838
L821
210V
R834 47k
JS823
D833
C824 2kV 1000p
C835 250V 100u
R835 3.9k
D834
C2
210V
D861
R852 1/2W 27k
D831
R874 39 1/2W
Q822
R840 2.2k
R872 10k
R849 22k
C871 16V 1000u
R853 3.6k
D859
Q824
D862
R873 10k
R854
R844 4.7k
D850
Q823
R875 3.3k
+B ON/OFF
R876 100k
IC805
HEATER
R870 1k
6.3V
D867
Vin
Vout(sw)
GND
Vadj
ON/OFF
R831 100
COLLECTOR
OUT
GND
IC802
R898 56k
R867 1.2k
L829
R894 1k 1%
R879 4.02k 1%
R899 22k
R865 3.3k
R866 560
Q826
R869 3.3k
C857 50V 470u
L845 100u
L846 22u
TPD10
C811 50V 10u
R868 100k
D876
C855 10V 470u
C858 16V 100u
GND
GND
HEATER
210V(L-PWB)
140V(VM)
D3



A6
D6
AUDIO GND
AUDIO 16V
AUDIO GND
AUDIO 16V
AUDIO -16V
AUDIO -16V
GND
←140V ON/OFF
SOS
←B DRIVE
←GUN CENTER ADJ
B FEEDBACK
←TRAPEZOIDE
A7
D7
ATSC 10V
UNREG 30V
UNREG 15V
← INNERPIN
VL
← V CENTER
← V DRIVE
← MAIN 12V
V GND
A8
D8
← H DRIVE2
BTL 30V
FBP
EHT PROTECT
ABL
← 480P/1080I
← V DAF
← H DAF
JS85
JS86
TPD54
TPD4
TPD53
TPD27
TPD24
TPD25
TPD5
TPD17
TPD28
TPD12
TPD11
TPD22
TPD31
BTL 30V
D863
TPD14
TPD15
EHTPRO
C852 50V 0.01u
TPD16
ABL
TPD51
VDAF
TPD52
H DAF
MAIN12V
R850 1.5k
18V
12V
R784 10k
R785 100
124V
Q459
C505 50V 0.1u
R787 10k
R786 100
C573 50V 0.01u
VCC
GND
IC507
3.3V
2.5V
V-DRIVE
-15V
Q820
15V OCP
R884 1.8 1W
C864 16V 100u
NP
R886 2.7k
R887 47k
Q831
R888 4.7k
D857
R889 2.7k
R705 10k
Q703
R719 0
R703 22k
Q702
Q704
R704 180k
JS50
R878 22k
140V OVP
R855 68k
D836
D835
R856 12k
R471 18k 1%
D471
R453 8.2k
R472 1% 1.5k
C463 35V 47u
C4
R451 1.2k
R452 2.2k
C467 50V 0.22u
TPD30
C452 25V 470u
C465 50V 0.01u
C451 25V 470u
C466 50V 0.01u
R454 47k 1%
C468 50V 2700p
-Vcc
-VccPOW
+VccPOW
+Vcc
Vref
EA-out
IN+
IN-
SGND
IC451
Output Drive
Flyback Generator
Vout
Cfly+
Cfly-
BOOT
VREG
FEEDCAP
FREQ
C453 50V 100u
C469 50V 0.1u
C455 16V 220u
C456 50V 4700p
C457 50V 470p
R456 10k
TPD29
L454
C454 50V 0.22u
C471 50V 0.01u
L453 470u
R473 2.7k
D460
R468 2.7k
R469 10k
L452
JS451
R457 56 1/2W
C460 250V 0.22u
C458 50V 1u
R467 4.7 1/2W
R466 1/2W 4.7
R459 1/2W 4.7
EHTPRO
ABL
J
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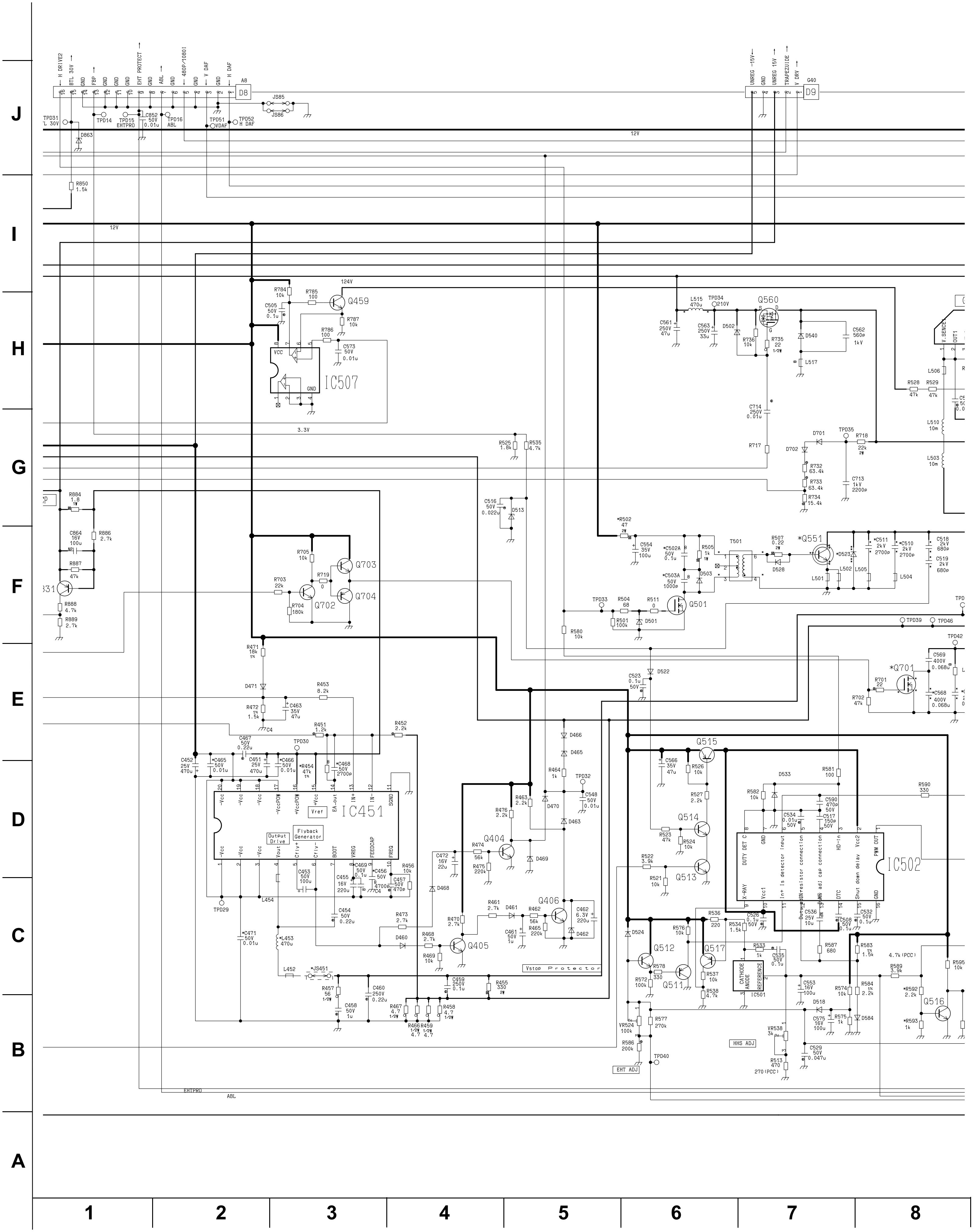
J
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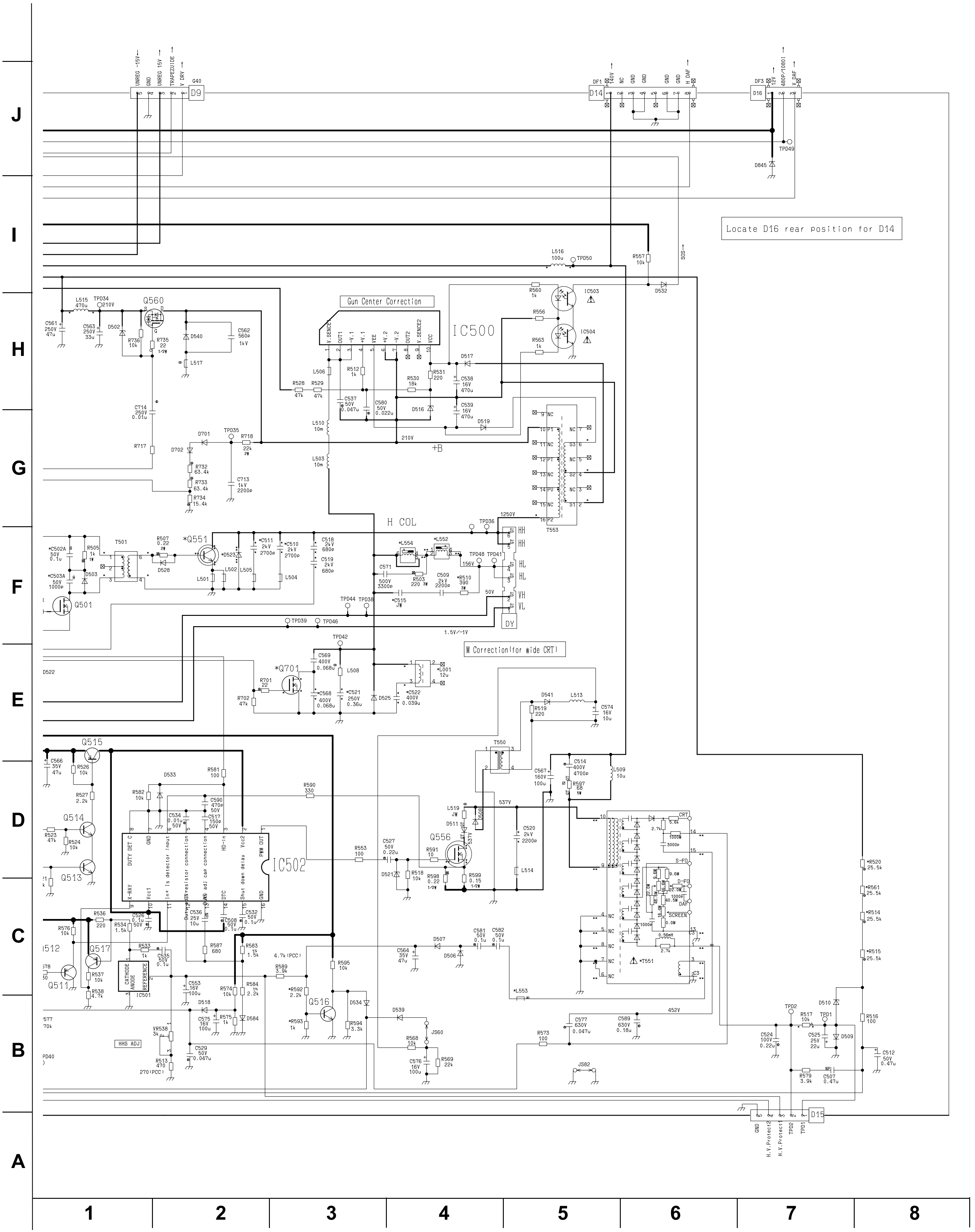
H DRIVE2
BTL 30V
GND
FBP
EHT PROTECT
ABL
480P/1080I
V DAF
H DAF
A8
D8
JS85
JS86
TPD31
TPD14
TPD15 EHTPRO
C852 50V 0.01u
TPD16 ABL
TPD51 VDAF
TPD52 H DAF
D863
12V
R850 1.5k
UNREG -15V
UNREG 15V
TRAPEZOIDE
V DRV
G40
D9
R784 10k
R785 100
124V
Q459
C505 50V 0.1u
R787 10k
R786 100
C573 50V 0.01u
VCC
GND
IC507
3.3V
L515 470u
TPD34 210V
Q560
C561 250V 47u
C563 250V 33u
D502
R736 10k
R735 22 1/2W
D540
C562 560p 1kV
L517
C714 250V 0.01u
R717
D701
D702
TPD35
R718 22k 2W
R732 63.4k
R733 63.4k
R734 15.4k
C713 1kV 2200p
V.SENCE
OUT1
L506
R528 47k
R529 47k
L510 10m
L503 10m
R525 1.8k
R535 4.7k
C516 50V 0.022u
D513
R884 1.8 1W
C864 16V 100u NP
R886 2.7k
R887 47k
Q831
R888 4.7k
R889 2.7k
R705 10k
Q703
R719 0
Q704
R703 22k
Q702
R704 180k
*R502 47 2W
C554 35V 100u
*C502A 50V 0.1u
R505 1k 1W
T501
R507 0.22 2W
*Q551
*C511 2kV 2700p
*C510 2kV 2700p
C518 2kV 680p
C519 2kV 680p
*D523
D528
L501
L502
L505
L504
*C503A 50V 1000p
D503
TPD33
R504 68
R511 0
Q501
R501 100k
D501
R580 10k
TPD39
TPD46
TPD42
C569 400V 0.068u
*Q701
R701 22
R702 47k
*C568 400V 0.068u
R471 18k 1%
D471
R453 8.2k
R472 1% 1.5k
C463 35V 47u
C4
D522
C523 0.1u 50V
R451 1.2k
R452 2.2k
C467 50V 0.22u
TPD30
C452 25V 470u
*C465 50V 0.01u
C451 25V 470u
*C466 50V 0.01u
*R454 47k 1%
*C468 50V 2700p
D466
D465
R464 1k
TPD32
C548 50V 0.01u
Q515
C566 35V 47u
R526 10k
R581 100
R590 330
-Vcc
-VccPOW
+VccPOW
+Vcc
Vref
EA-out
IN+
IN-
SGND
IC451
Output Drive
Flyback Generator
Vout
Cfly+
Cfly-
BOOT
VREG
FEEDCAP
FREQ
R463 2.2k
R476 2.2k
D470
D463
R527 2.2k
Q514
D533
R582 10k
C534 0.01u 50V
C590 470p 50V
C517 150p 50V
R523 47k
R524 10k
Q404
R474 56k
R475 220k
D469
R522 3.9k
R521 10k
Q513
DUTY DET C
Is detector input
resistor connection
cap connection
HD-in
Vcc2
PWM OUT
X-RAY
Vcc1
Duty Det IN
AMB adj cap connection
DTC
Shut down delay
IC502
C453 50V 100u
C455 16V 220u
C469 50V 0.1u
*C456 50V 4700p
C457 50V 470p
R456 10k
C472 16V 22u
D468
TPD29
L454
C454 50V 0.22u
R473 2.7k
R470 2.7k
R461 2.7k
D461
Q406
R462 56k
R465 220k
C461 50V 1u
C462 6.3V 220u
D462
R536 220
R534 1.5k
C526 0.1u 50V
C536 25V 10u
C508 50V 0.1u
C532 50V 0.1u
*C471 50V 0.01u
*L453 470u
D460
R468 2.7k
Q405
R469 10k
Vstop Protector
D524
Q512
R576 10k
Q517
R533 1k
C535 50V 0.1u
R587 680
R583 1% 1.5k
4.7k (PCC)
R589 3.9k
R595 10k
L452
*JS451
R578 330
R572 100k
Q511
R537 10k
R538 4.7k
CATHODE ANODE REFERENCE
IC501
C553 16V 100u
R574 10k
R584 1% 2.2k
*R592 2.2k
Q516
R457 56 1/2W
C458 50V 1u
C460 250V 0.22u
C459 250V 0.1u
R455 330 2W
R467 4.7 1/2W
R466 1/2W 4.7
R459 1/2W 4.7
R458 4.7 1/2W
D518
C575 16V 100u
R575 1k
D584
*R593 1k
VR524 100k
R577 270k
VR538 3k
R586 200k
TPD40
EHT ADJ
HHS ADJ
C529 50V 0.047u
R513 470
270 (PCC)
EHTPRO
ABL



J
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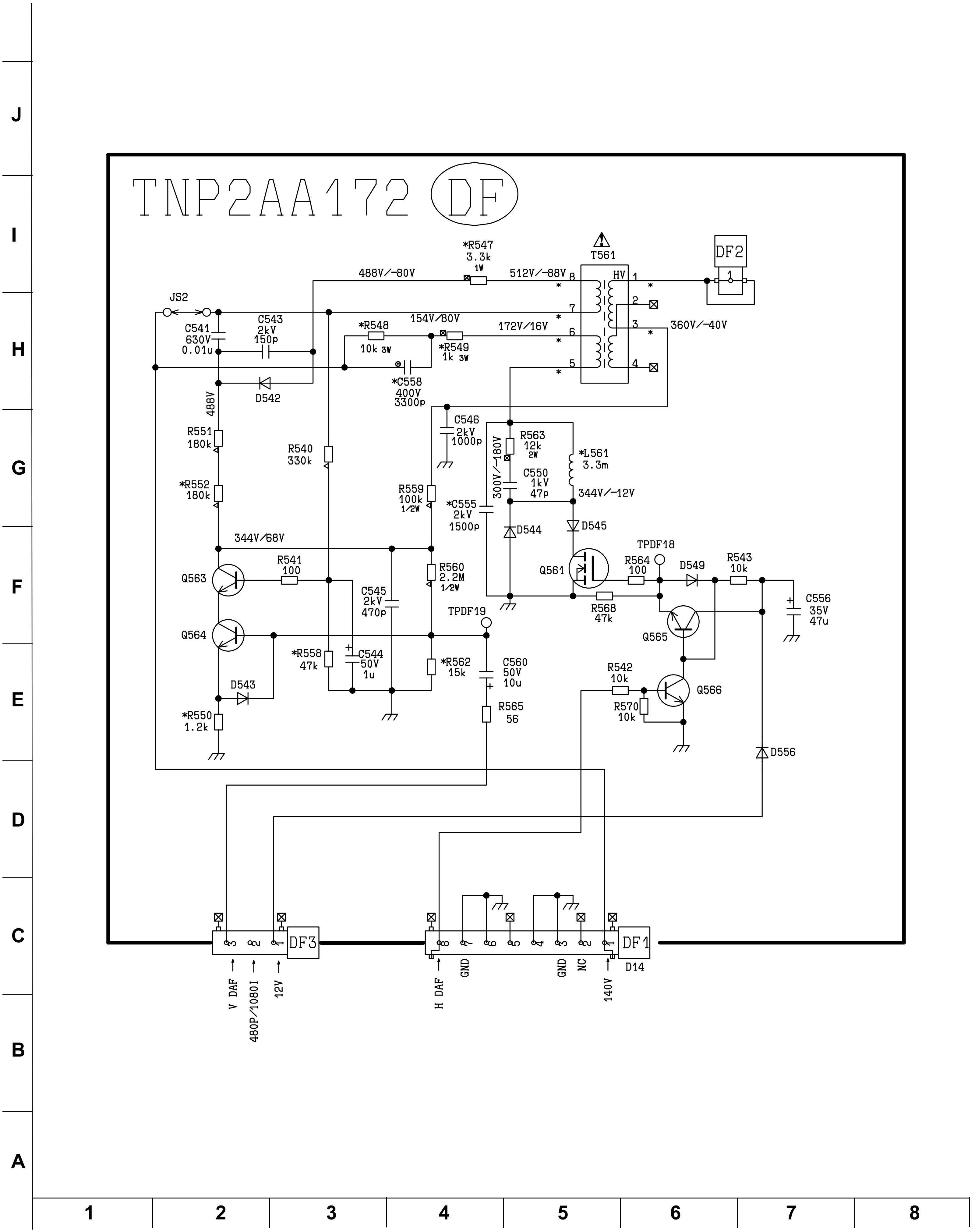
UNREG -15V
GND
UNREG 15V
TRAPEZUIDE
V DRV
G40
D9
DF1
D14
140V
NC
GND
GND
GND
GND
H DAF
DF3
D16
12V
480P/1080I
V DAF
TPD49
D845
Locate D16 rear position for D14
L516 100u
TPD50
R557 10k
SOS
D532
L515 470u
TPD34 210V
Q560
C561 250V 47u
C563 250V 33u
D502
R736 10k
R735 22 1/2W
D540
C562 560p 1kV
L517
C714 250V 0.01u
R717
Gun Center Correction
IC500
V.SENCE1
OUT1
-V.1
+V.1
VEE
+V.2
-V.2
OUT2
V.SENCE2
VCC
R560 1k
IC503
R556
IC504
R563 1k
D517
L506
R512 1k
R528 47k
R529 47k
R530 18k
R531 220
C538 16V 470u
C537 50V 0.047u
C580 50V 0.022u
D516
C539 16V 470u
D519
L510 10m
L503 10m
D701
D702
TPD35
R718 22k 2W
210V
+B
R732 63.4k
R733 63.4k
R734 15.4k
C713 1kV 2200p
T553
1250V
H COL
TPD36
HH
HL
VH
VL
DY
*C502A 50V 0.1u
R505 1k 1W
T501
R507 0.22 2W
*Q551
D528
*D523
*C511 2kV 2700p
*C510 2kV 2700p
C518 2kV 680p
C519 2kV 680p
*C503A 50V 1000p
D503
L501
L502
L505
L504
Q501
*L554
*L552
TPD48
TPD41
156V
C571 500V 3300p
R503 220 3W
C509 2kV 2200p
*R510 390 3W
50V
*C515 JW
TPD44
TPD38
TPD39
TPD46
1.5V/-1V
M Correction(for wide CRT)
D522
TPD42
C569 400V 0.068u
L508
*Q701
R701 22
R702 47k
*C568 400V 0.068u
*C521 250V 0.36u
D525
*C522 400V 0.039u
*L001 12u
D541
L513
R519 220
C574 16V 10u
T550
C567 160V 100u
C514 400V 4700p
L509 10u
R597 68 5W
Q515
C566 35V 47u
R526 10k
R527 2.2k
Q514
R523 47k
R524 10k
Q513
D533
R581 100
R582 10k
C590 470p 50V
C534 0.01u 50V
C517 150p 50V
R590 330
IC502
DUTY DET C
GND
In+ Is detector input
Duty adj resistor connection
Duty adj cap connection
HD-in
Vcc2
PWM OUT
X-RAY
Vcc1
DTC
Shut down delay
R553 100
C527 50V 0.22u
R591 10
Q556
L519 JW
D511
D508
537V
C520 2kV 2200p
L514
D521
R518 10k
R598 0.22 1/2W
R599 0.15 1/2W
CRT
S-FO
D-FO
DAF
SCREEN
*T551
R536 220
R534 1.5k
C526 0.1u 50V
C536 25V 10u
C508 50V 0.1u
C532 50V 0.1u
R576 10k
Q517
R533 1k
C535 50V 0.1u
R587 680
R583 1% 1.5k
4.7k(PCC)
R589 3.9k
R595 10k
C564 35V 47u
D507
D506
C581 50V 0.1u
C582 50V 0.1u
Q511
R537 10k
R538 4.7k
CATHODE
ANODE
REFERENCE
IC501
C553 16V 100u
R574 10k
R584 1% 2.2k
*R592 2.2k
Q516
D534
D539
*L553
452V
D518
C575 16V 100u
R575 1k
D584
*R593 1k
R594 3.3k
JS60
R568 10k
C576 16V 100u
R569 22k
C577 630V 0.047u
C589 630V 0.18u
R573 100
JS82
VR538 3k
HHS ADJ
R513 470
270(PCC)
C529 50V 0.047u
TPD40
*R520 25.5k
*R561 25.5k
*R514 25.5k
*R515 25.5k
D510
R516 100
TPD2
R517 10k
TPD1
C524 100V 0.22u
C525 25V 22u
D509
C512 50V 0.47u
R579 3.9k
C507 0.47u
D15
H.V.Protect2
H.V.Protect1


TNP2AA172
DF
*R547
3.3k
1W
488V/-80V
512V/-88V
T561
DF2
HV
8
7
6
5
1
2
3
4
JS2
C543
2kV
150p
C541
630V
0.01u
*R548
10k 3W
154V/80V
*R549
1k 3W
172V/16V
360V/-40V
*C558
400V
3300p
D542
488V
C546
2kV
1000p
R551
180k
R540
330k
R563
12k
2W
300V/-180V
*L561
3.3m
C550
1kV
47p
344V/-12V
*R552
180k
R559
100k
1/2W
*C555
2kV
1500p
D544
D545
344V/68V
TPDF18
Q563
R541
100
R560
2.2M
1/2W
C545
2kV
470p
Q561
R564
100
D549
R543
10k
C556
35V
47u
R568
47k
Q564
TPDF19
Q565
*R558
47k
C544
50V
1u
*R562
15k
C560
50V
10u
R542
10k
Q566
D543
R570
10k
*R550
1.2k
R565
56
D556
DF3
V DAF
480P/1080I
12V
DF1
D14
H DAF
GND
GND
NC
140V
J
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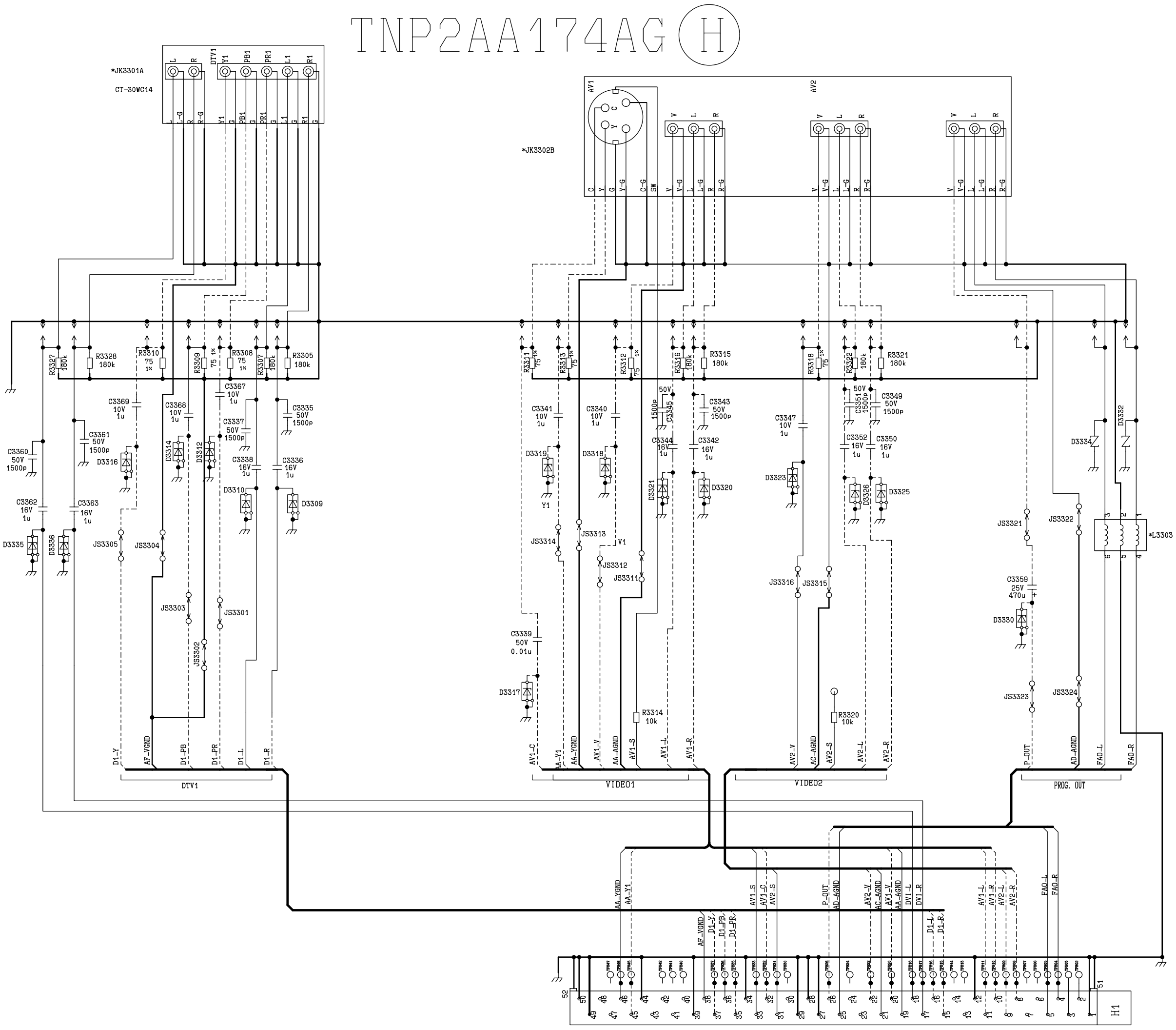
TNP2AA174AG (H)
*JK3301A
CT-30WC14
DTV1
L
R
Y1
PB1
PR1
L1
R1
*JK3302B
AV1
AV2
V
L
R
C
Y
G
Y-G
C-G
SW
V-G
L-G
R-G
R3327 180k
R3328 180k
R3310 75 1%
R3309 75 1%
R3308 75 1%
R3307 180k
R3305 180k
C3369 10V 1u
C3368 10V 1u
C3367 10V 1u
C3335 50V 1500p
C3361 50V 1500p
C3337 50V 1500p
C3360 50V 1500p
C3338 16V 1u
C3336 16V 1u
C3362 16V 1u
C3363 16V 1u
D3316
D3314
D3312
D3310
D3309
D3335
D3336
JS3305
JS3304
JS3303
JS3302
JS3301
R3311 75 1%
R3313 75 1%
R3312 75 1%
R3316 180k
R3315 180k
R3318 75 1%
R3322 180k
R3321 180k
C3341 10V 1u
C3340 10V 1u
C3345 50V 1500p
C3343 50V 1500p
C3344 16V 1u
C3342 16V 1u
C3347 10V 1u
C3351 50V 1500p
C3349 50V 1500p
C3352 16V 1u
C3350 16V 1u
C3339 50V 0.01u
C3359 25V 470u
D3319
D3318
D3321
D3320
D3323
D3326
D3325
D3317
D3330
D3334
D3332
Y1
JS3314
JS3313
JS3312
JS3311
JS3316
JS3315
JS3321
JS3322
JS3323
JS3324
*L3303
R3314 10k
R3320 10k
D1_Y
AF_VGND
D1_PB
D1_PR
D1_L
D1_R
DTV1
AV1_C
AA_Y1
AA_VGND
AV1_V
AA_AGND
AV1_S
AV1_L
AV1_R
VIDEO1
AV2_V
AC_AGND
AV2_S
AV2_L
AV2_R
VIDEO2
P_OUT
AD_AGND
FAO_L
FAO_R
PROG. OUT
AA_VGND
AA_Y1
AF_VGND
D1_Y
D1_PB
D1_PR
AV1_S
AV1_C
AV2_S
P_OUT
AD_AGND
AV2_V
AC_AGND
AV1_V
AA_AGND
D1_L
D1_R
DV1_L
DV1_R
AV1_L
AV1_R
AV2_L
AV2_R
FAO_L
FAO_R
H1
52
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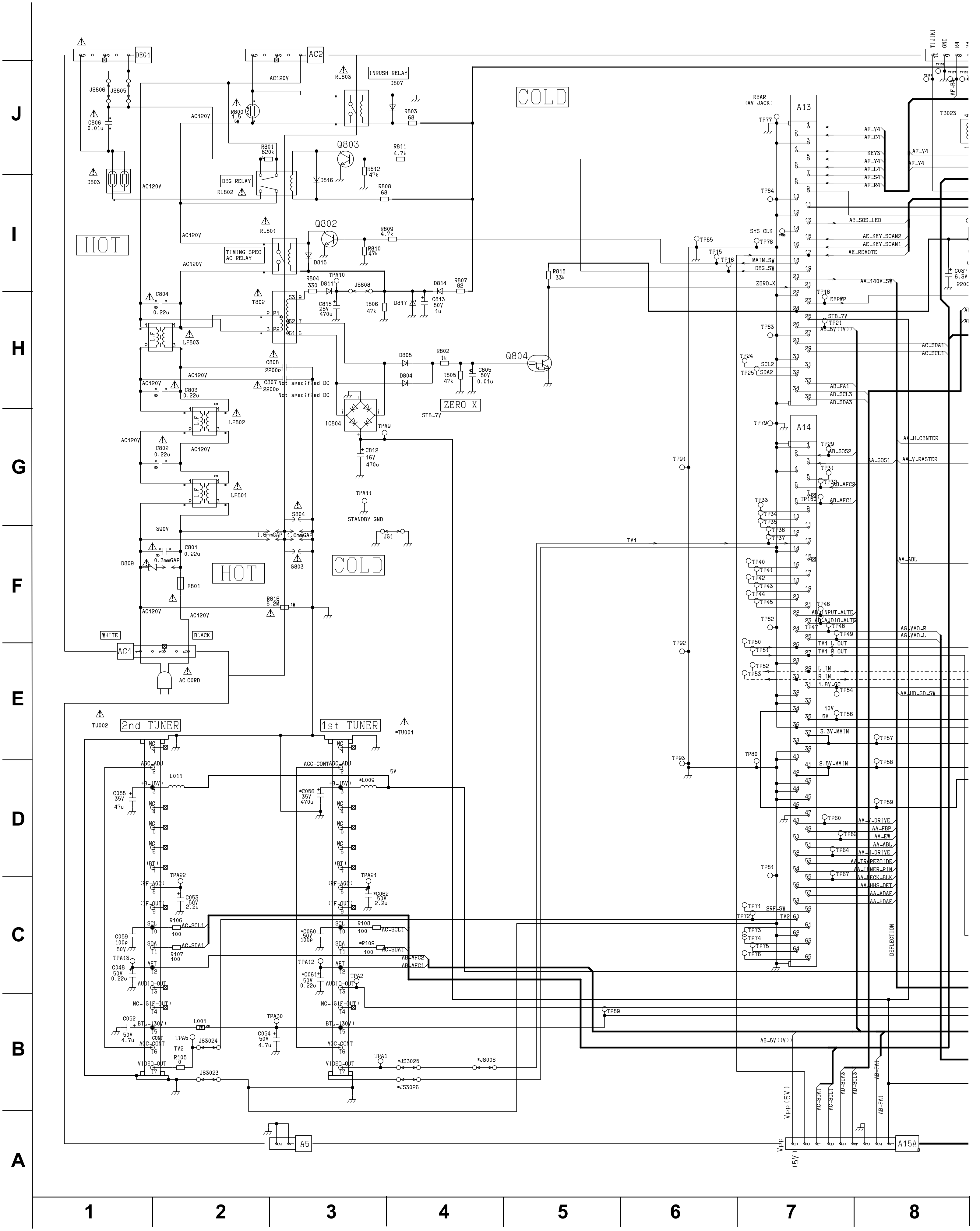

J
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7
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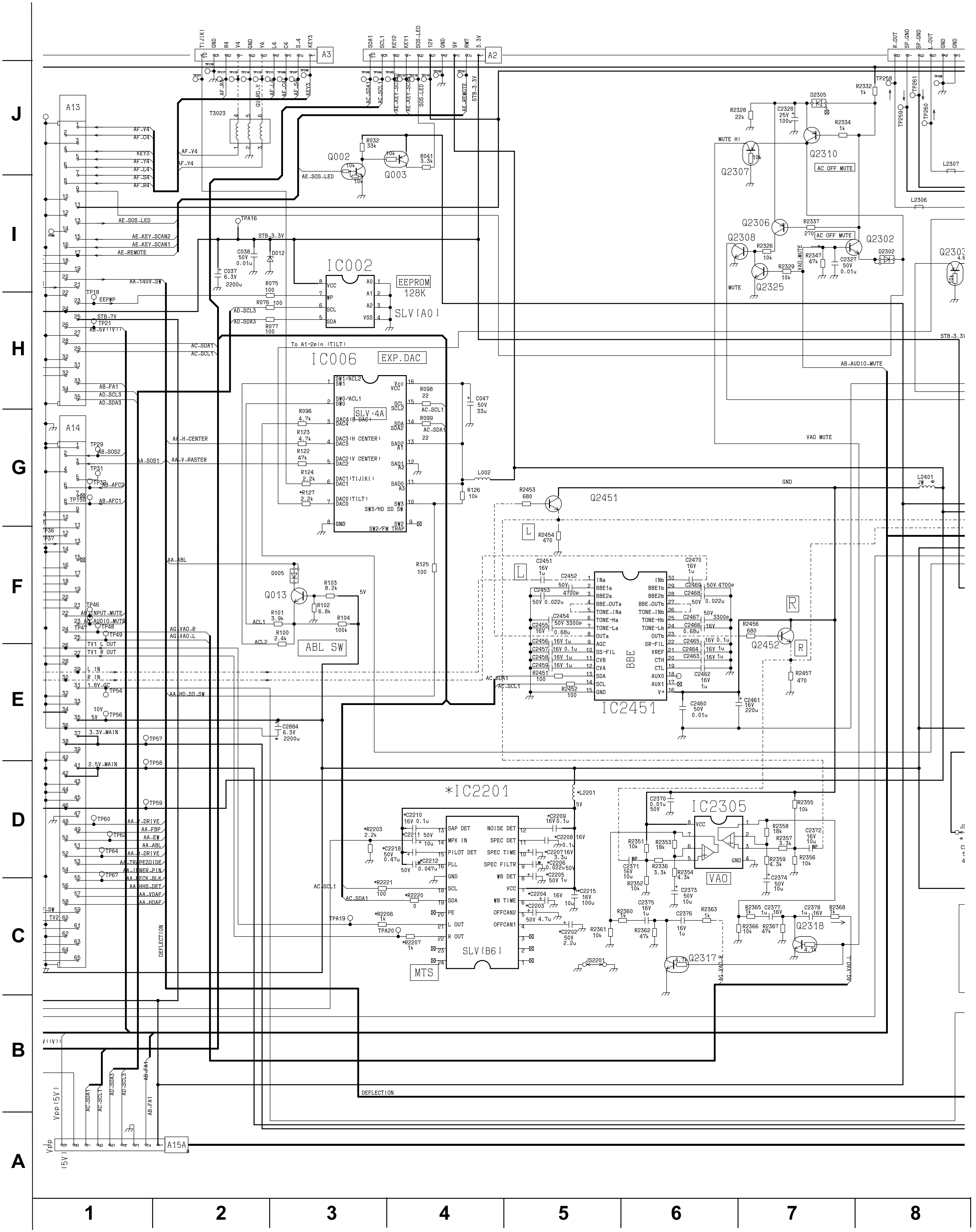
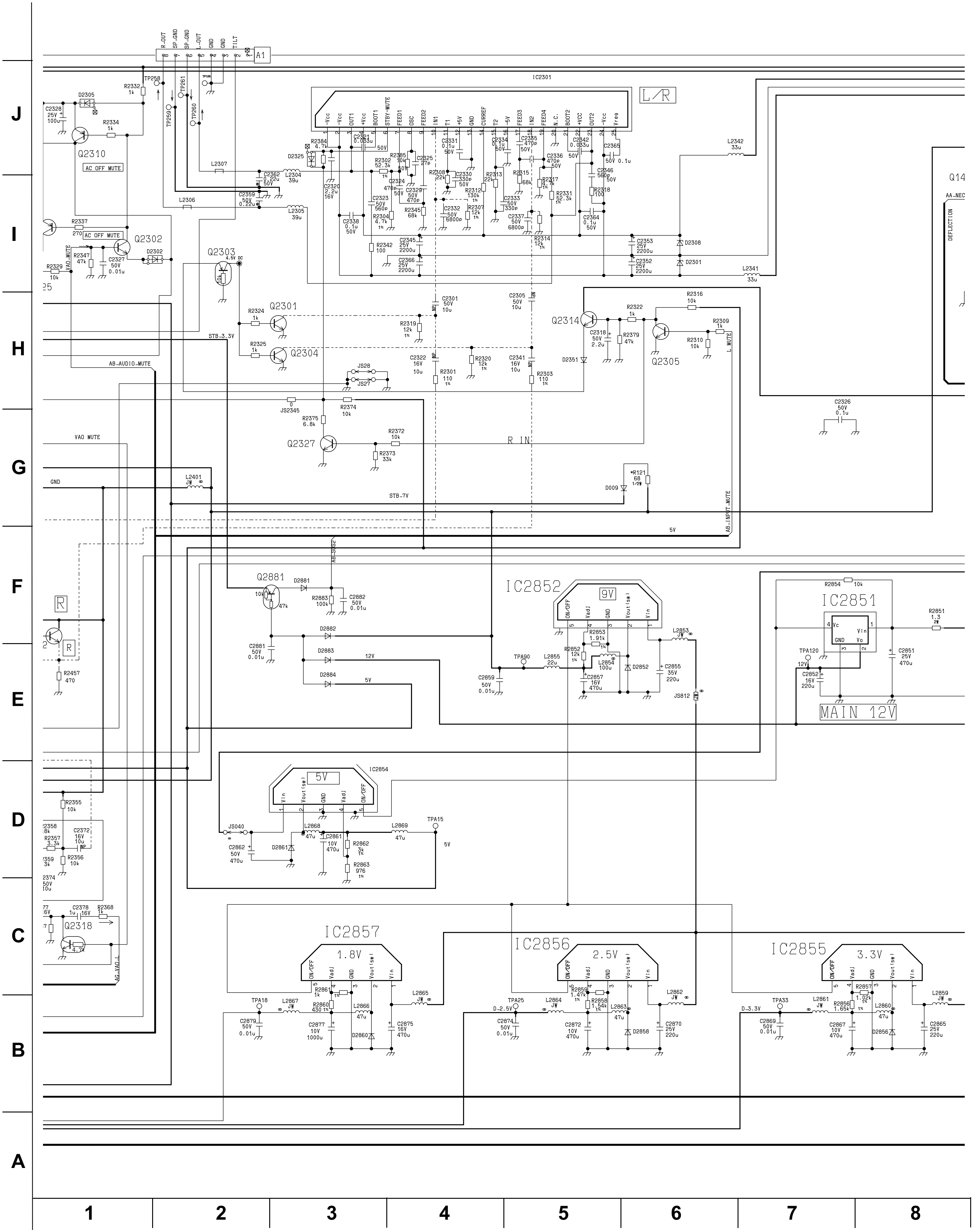
DEG1
AC2
JS806
JS805
C806 0.01u
D803
HOT
COLD
AC120V
R800 1.5 5W
RL803
INRUSH RELAY
D807
R803 68
Q803
R811 4.7k
R812 47k
R808 68
R801 820k
DEG RELAY
RL802
D816
RL801
Q802
R809 4.7k
R810 47k
TIMING SPEC AC RELAY
D815
C804 0.22u
T802
R804 330
D811
TPA10
JS808
D814
R807 82
C815 25V 470u
R806 47k
D817
C813 50V 1u
LF803
C808 2200p
C807 2200p
Not specified DC
D805
D804
R802 1k
R805 47k
C805 50V 0.01u
Q804
ZERO X
STB-7V
IC804
TPA9
C803 0.22u
LF802
C802 0.22u
C812 16V 470u
TPA11
STANDBY GND
LF801
S804
S803
390V
1.6mmGAP
C801 0.22u
0.3mmGAP
D809
JS1
F801
R816 8.2M 1W
WHITE
BLACK
AC1
AC CORD
R815 33k
TV1
TU002
2nd TUNER
1st TUNER
*TU001
NC
AGC-ADJ
AGC-CONT
+B-(5V)
L011
*L009
5V
C055 35V 47u
*C056 35V 470u
(BT)
TPA22
TPA21
(RF-AGC)
(IF-OUT)
C053 50V 2.2u
*C062 50V 2.2u
SCL
SDA
AFT
R106 100
R107 100
R108 100
*R109 100
AC-SCL1
AC-SDA1
C059 100p 50V
*C060 50V 100p
TPA13
TPA12
C048 50V 0.22u
*C061 50V 0.22u
AB-AFC2
AB-AFC1
AUDIO-OUT
TPA2
NC-(SIF-OUT)
C052 50V 4.7u
BTL-(30V)
L001
TPA30
C054 50V 4.7u
TPA5
JS3024
TV2
R105 0
AGC-CONT
VIDEO-OUT
JS3023
TPA1
*JS3025
*JS006
*JS3026
TP89
A5
REAR (AV JACK)
A13
TP77
AF-V4
AF-C4
KEY3
AF-Y4
AF-L4
AF-S4
AF-R4
TP84
SYS CLK
TP78
TP85
TP15
TP16
AE-SOS-LED
AE-KEY-SCAN2
AE-KEY-SCAN1
AE-REMOTE
MAIN-SW
DEG-SW
ZERO-X
AA-140V-SW
TP18
EEPWP
STB-7V
TP21
AB-5V(V)
TP83
AC-SDA1
AC-SCL1
TP24
SCL2
TP25
SDA2
AB-FA1
AD-SCL3
AD-SDA3
TP79
A14
TP29
AB-SOS2
AA-H-CENTER
AA-SOS1
AA-V-RASTER
TP31
TP32
AB-AFC2
TP150
AB-AFC1
TP91
TP33
TP34
TP35
TP36
TP37
TP40
TP41
TP42
TP43
TP44
TP45
AA-ABL
TP46
AB-INPUT-MUTE
AB-AUDIO-MUTE
TP47
TP48
TP49
TP82
AG-VAO-R
AG-VAO-L
TP92
TP50
TP51
TV1 L OUT
TV1 R OUT
TP52
TP53
L IN
R IN
1.8V-GC
TP54
AA-HD-SD-SW
10V
5V
TP56
3.3V-MAIN
TP57
TP93
TP80
2.5V-MAIN
TP58
TP59
TP60
AA-V-DRIVE
AA-FBP
TP62
AA-EW
AA-ABL
TP64
AA-H-DRIVE
AA-TRAPEZOIDE
AA-INNER-PIN
TP67
AA-NECK-BLK
AA-HHS-DET
AA-VDAF
AA-HDAF
TP81
TP71
2RF-SW
TP72
TV2
TP73
TP74
TP75
TP76
DEFLECTION
AB-5V(V)
Vpp(5V)
AC-SDA1
AC-SCL1
AD-SDA3
AD-SCL3
AB-FA1
A15A
TIJIKI
GND
T3023
AF-V4
AF-Y4
C037 6.3V


A3
A2
A13
A14
A15A
T3023
Q002
Q003
IC002
EEPROM
128K
SLV[A0]
IC006
EXP.DAC
SLV:4A
To A1-2pin (TILT)
Q013
D005
ABL SW
D012
C037
C038
C047
L002
Q2451
Q2452
IC2451
BBE
L
R
*IC2201
SLV[B6]
MTS
IC2305
VAO
Q2317
Q2318
Q2302
Q2303
Q2306
Q2307
Q2308
Q2310
Q2325
AC OFF MUTE
MUTE H:
MUTE
VAO MUTE
AB-AUDIO-MUTE
STB-3.3V
GND
L2401
L2306
L2307
D2302
D2305
*L2201
JS2201
DEFLECTION
Vpp(5V)
Vpp (5V)
AE-SOS-LED
AE-KEY-SCAN2
AE-KEY-SCAN1
AE-REMOTE
AA-140V-SW
EEPWP
STB-7V
AC-SDA1
AC-SCL1
AB-FA1
AD-SCL3
AD-SDA3
AA-H-CENTER
AA-V-RASTER
AA-SOS1
AB-SOS2
AB-AFC2
AB-AFC1
AA-ABL
AB-INPUT-MUTE
AB-AUDIO-MUTE
AG-VAO-R
AG-VAO-L
TV1 L OUT
TV1 R OUT
L IN
R IN
1.8V-GC
AA-HD-SD-SW
3.3V-MAIN
2.5V-MAIN
AA-V-DRIVE
AA-FBP
AA-EW
AA-ABL
AA-H-DRIVE
AA-TRAPEZOIDE
AA-INNER-PIN
AA-NECK-BLK
AA-HHS-DATA
AA-VDAF
AA-HDAF
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8

A-BOARD 2/4 TNP2AH061AC/AE CT-30WX54J/UJ, CT-30WC14J/UJ



A1
R-OUT
SP-GND
SP-GND
L-OUT
GND
GND
TILT
IC2301
L/R
-Vcc
-Vcc
OUT1
+Vcc
BOOT1
STBY-MUTE
FEED1
OSC
FEED2
IN1
T1
+5V
GND
CURREF
T2
-5V
FEED3
IN2
FEED4
N.C.
BOOT2
+VCC
OUT2
-Vcc
Vreg
Q2310
AC OFF MUTE
D2305
R2332 1k
R2334 1k
C2328 25V 100u
TP258
TP259
TP261
TP260
TP126
Q2302
AC OFF MUTE
R2337 270
D2302
R2347 47k
C2327 50V 0.01u
R2329 10k
VAO_MUTE
Q2303
4.5V DC
L2307
L2306
L2304 39u
L2305 39u
C2362 0.22u 50V
C2359 50V 0.22u
D2325
R2384 4.7k
C2320 2.2u 16V
C2321 0.033u
R2302 52.3k
C2338 0.1u 50V
C2323 50V 560p
R2304 4.7k
R2342 100
C2345 25V 2200u
C2366 25V 2200u
C2353 25V 2200u
C2352 25V 2200u
D2308
D2301
L2342 33u
L2341 33u
C2365 50V 0.1u
C2346 560p 50V
R2318 100
C2364 0.1u 50V
C2342 0.033u
R2331 52.3k
R2314 12k
C2336 470p 50V
C2337 50V 6800p
C2333 50V 330p
C2334 0.1u 50V
C2335 470p
R2315 68k
R2317 4.7k
R2313 22k
R2312 130k
R2307 12k
C2332 50V 6800p
C2330 330p 50V
C2331 0.1u 50V
R2308 22k
R2345 68k
C2329 50V 470p
C2324 470p 50V
R2385 10k
C2325 27p
Q14
AA-NEC
DEFLECTION
Q2301
Q2304
R2324 1k
R2325 1k
STB-3.3V
AB-AUDIO-MUTE
C2301 50V 10u
R2319 12k
C2322 16V 10u
R2301 110
R2320 12k
C2305 50V 10u
C2341 16V 10u
R2303 110
JS28
JS27
Q2314
R2322 1k
R2316 10k
C2318 50V 2.2u
R2379 47k
Q2305
R2309 1k
R2310 10k
L_MUTE
D2351
C2326 50V 0.1u
JS2345
R2374 10k
R2375 6.8k
Q2327
R2372 10k
R2373 33k
R IN
VAO MUTE
GND
L2401
STB-7V
*R121 68 1/2W
D009
AB-INPUT-MUTE
5V
AB-SUS2
Q2881
D2881
R2883 100k
C2882 50V 0.01u
C2881 50V 0.01u
D2882
D2883
D2884
12V
5V
R
R
R2457 470
IC2852
9V
ON/OFF
Vadj
GND
Vout(sw)
Vin
R2853 1.91k
R2852 12k
L2854 100u
D2852
C2855 35V 220u
C2857 16V 470u
L2853
L2855 22u
TPA90
C2859 50V 0.01u
JS812
IC2851
R2854 10k
Vc
Vin
GND
Vo
R2851 1.3 2W
TPA120
12V
C2852 16V 220u
C2851 25V 470u
MAIN 12V
IC2854
5V
JS040
C2862 50V 470u
D2861
L2868 47u
C2861 10V 470u
R2862 3k
R2863 976
L2869 47u
TPA15
5V
R2355 10k
R2358 18k
R2357 3.3k
C2372 16V 10u
R2359 3k
R2356 10k
C2374 50V 10u
C2378 16V 1u
R2368 1k
Q2318
AG_VAO_L
IC2857
1.8V
R2861 1k
R2860 430
L2867
TPA18
C2879 50V 0.01u
C2877 10V 1000u
L2866 47u
D2860
C2875 16V 470u
L2865
IC2856
2.5V
R2859 1.47k
R2858 1.54k
L2864
TPA25
D-2.5V
C2874 50V 0.01u
C2872 10V 470u
L2863 47u
D2858
C2870 25V 220u
L2862
IC2855
3.3V
R2857 1.02k
R2856 1.65k
L2861
TPA33
D-3.3V
C2869 50V 0.01u
C2867 10V 470u
L2860 47u
D2856
C2865 25V 220u
L2859
A
B
C
D
E
F
G
H
I
J
1
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A-BOARD 3/4 TNP2AH061AC/AE CT-30WX54J/UJ, CT-30WC14J/UJ

Service Manual

TOP NEXT

MTNC040418C1

B19 Canada: B05

Service Manual

Color Television

- CT-32HL44J
  CT-32HL44UJ

GN1

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

TOP NEXT

1 Safety precautions

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General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injuryfrom electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer s recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautionswhen servicing high voltage equipment.

Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, usesafety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a wellinsulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shieldlimits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a returnpath to the chassis, the reading should be between 240kΩ and 5.2MΩ. If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

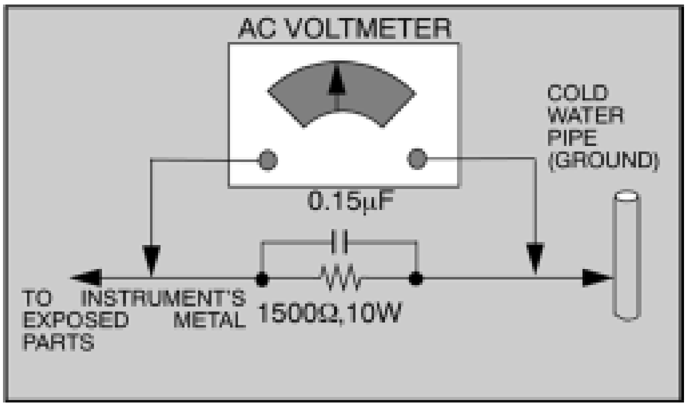
Connect a 1.5kΩ 10 watt resistor in parallel with a 0.15μF capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliamp. Ifany measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

Hot check circuit



Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1500VAC/60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X ray radiation

WARNING

The potential source of x ray radiation in the TV set is in the high voltage section and the picture tube.

NOTE

It is important to use an accurate, calibrated high voltage meter.

Set the brightness, picture, sharpness and color controls to minimum.

Measure the high voltage. With a 480i signal the high voltage should be 31.0kV ± 0.3kV and with a 1080i signal the high voltage should be 31.0kV ± 0.3kV. If the upper limit is out of tolerance, immediate service and correctionis required to insure safe operation and to prevent the possibility of premature component failure.

Horizontal oscillator disable circuit test

This test must be performed as a final check before the receiver is returned to the customer. See horizontal oscillator disable circuit procedure check in this manual.

TOP PREVIOUS NEXT

2 Service notes

TOP PREVIOUS NEXT

NOTE

These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board,however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6kΩ resistor, 0 = 0Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

Component removal

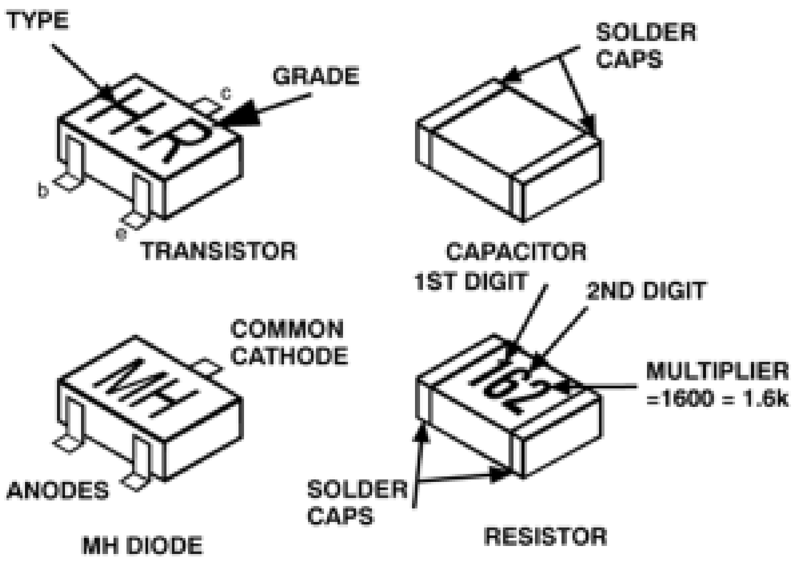
1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip component installation

1. Put a small amount of solder on the board soldering pads.

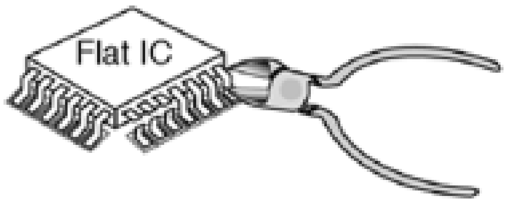
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip components

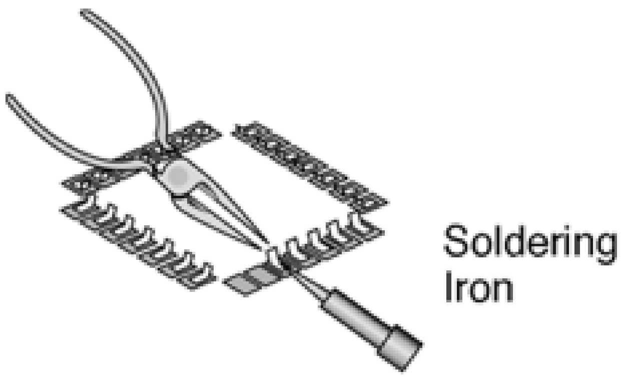

TYPE
GRADE
H-R
c
b
e
TRANSISTOR
SOLDER CAPS
CAPACITOR
1ST DIGIT
2ND DIGIT
162
MULTIPLIER =1600 = 1.6k
COMMON CATHODE
MH
ANODES
MH DIODE
SOLDER CAPS
RESISTOR

How to replace flat ic (required tools)

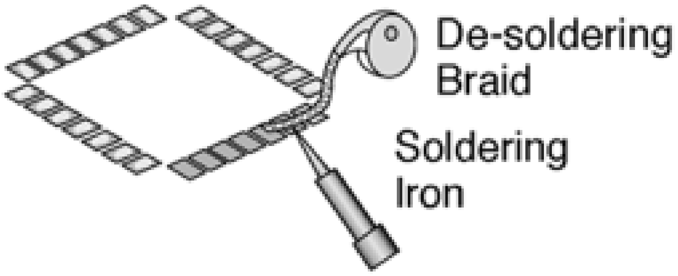
1. Remove the solder from all of the pins of a Flat IC by using a desolder braid



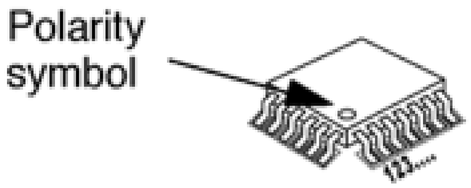
2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.

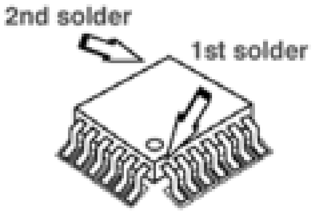

Soldering Iron

3. Remove the solder from all the pads of the Flat IC by using a de solder braid

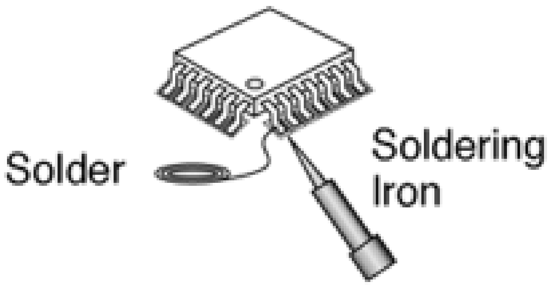

De-soldering Braid
Soldering Iron

4. Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol

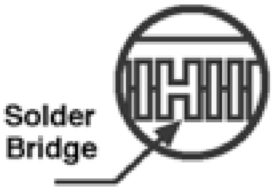

Polarity symbol
123....

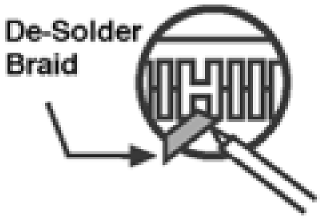

2nd solder
1st solder

5. Solder all pins to the soldering pads using a fine tipped soldering iron


Solder
Soldering Iron

6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below


Solder Bridge


De-Solder Braid

IMPORTANT

To protect against possible damage to the solid state devices due to arching or static discharge, make certain that all ground wires and CRT DAG wire are securely connected.

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis.

Connect the test equipment to the proper ground(hot) or (cold) when servicing, or incorrect voltages will be measured.

WARNING

This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol on the schematic must be replaced with identical parts. Order parts from the manufacturer s partscenter using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

This chassis employs a special circuit to protect against excessive high voltage and beam current. If, for any reason, the high voltage and beam current exceed a predetermined level this protective circuit activates and detunes the horizontal oscillatorthat limits the high voltage. The over-voltage protection circuit is not adjustable. However, if components indicated by the symbol on the schematic in either the horizontal sweep system or the over-voltage protection circuit itself are changed, theoperation of the circuit should be checked using the following procedure:

Equipment needed to check the disabled circuit:

1. High voltage meter (0 ~ 50kV)
2. Variac or isolation transformer
3. D.C. current meter
4. Digital voltmeter

PREPARATION

1. Connect receiver to A.C. 120 Volts. Do not turn ON.
2. Connect HIGH VOLTAGE meter to 2nd anode (H.V. button).

   ### NOTE

   Use cold ground for negative lead.

3. Connect the ammeter serial from the flyback anode lead to the picture tube anode socket.

PROCEDURE

1. Confirm that beam current is 2.4_mA.
2. Adjust VR524 so that high voltage is 31.0 ± 0.3kV.
3. Adjust VR538 so that digital meter reads 2.3 ± 0.05V
4. Apply a black pattern
5. Confirm that high voltage protector (SOS) operates at 38.5kV or less by adjusting VR524.
6. Turn VR524 counter clockwise, turn tv on and apply a white pattern.
7. Adjust VR524 so that high voltage meter reads 31.0 ± 0.3kV
8. Once the adjustment is completed, apply a bond on VR538 and VR538. Confirm B+ 142V ± 6.0V with 120V A.C. applied.

   NOTE

   If high voltage is not within the specified limit the cause must be determined before the receiver is returned to the owner.

TOP PREVIOUS NEXT

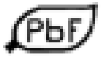
3 About lead free solder (PbF)

TOP PREVIOUS NEXT

NOTE

Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder.
The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).
Thatis Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it s manufacture due to environmental conservation issues. For service and repair work, we d suggest the use of Pb free solder as well, although Pb solder may be used.
PCBs manufacturedusing lead free solder will have the PbF or a leaf symbol stamped on the back of PCB.

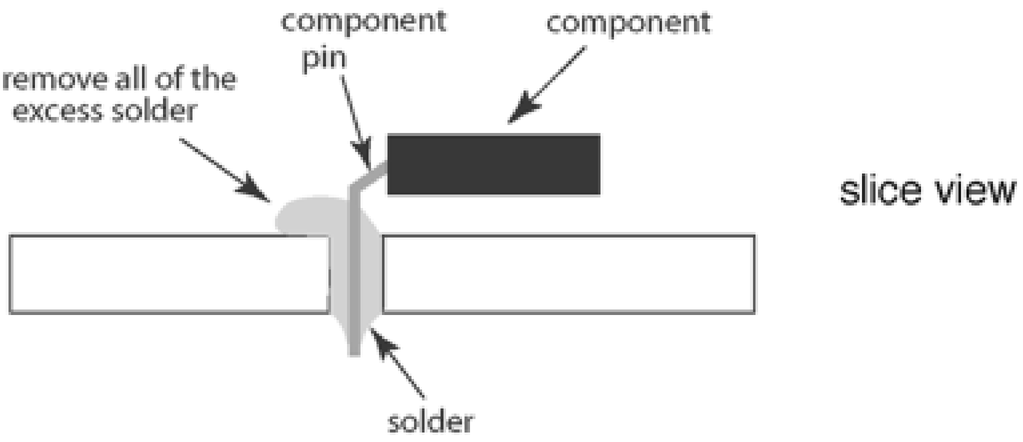


CAUTION

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).

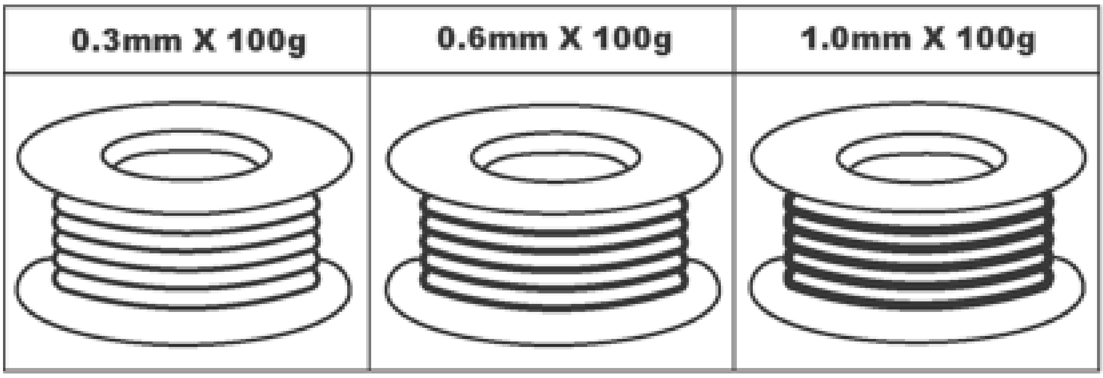
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
  If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If thisis not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.



Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also beused.


0.3mm X 100g
0.6mm X 100g
1.0mm X 100g

TOP PREVIOUS NEXT

4 Receiver feature table

TOP PREVIOUS NEXT

FEATURE/MODEL	CT-32HL44J/UJ
CHASSIS	BP418
MICRO	256K
MENU LANGUAGE	ENG/SPAN/FR
CLOSE CAPTION	X
V-CHIP (USA/CANADA	X
CHANNEL INFO BANNER	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
REMOTE CONTROL (W/LIGHT)	EUR7603ZF0
CRT SUPPLIER	MDDA PF SST
FAMILY	GN1
COMB FILTER	MOTION ADP, 3DY/C
HEC/VEC (X=BOTH)	X
VM	X (SELECTABLE)
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	1080i, 480p
NTSC LINE DOUBLER	480p PROGRESSIVE
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	15W X 2
No. OF SPEAKERS	2
BASS/BALANCE/TREBLE CONTROL	X
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE
A/V IN (REAR/FRONT)	4(3/1)
PROGRAM OUT	X
AUDIO OUT (FAO: F, VAO:V)	F, V
COMPONENT INPUT (Y, Pb, Pr)	2

S-VHS INPUT (REAR/FRONT)	2/1
HDMI/HDCP INPUT	X
WEIGHT (KG/LB)	98KG/216LB
DIMENSIONS (W/D/H) mm	1094.0/742/891

Note:

Specifications are subject to change without notice or obligation. Dimensions and weights are approximate.

TOP PREVIOUS NEXT

5 Board description table

TOP PREVIOUS NEXT

BOARD	CT-32HL44J/UJ	DESCRIPTION
A-BOARD	TNP2AH061AD	MAIN CHASSIS
D-BOARD	TNP2AH062AD	HIGH VOLTAGE AND DEFLECTION
DG-BOARD	TNP2AA173AD	DIGITAL VIDEO
DF-BOARD	TNP2AA172AB	DYNAMIC FOCUS
H-BOARD	TNP2AA174AB	REAR A/V
L-BOARD	TNP2AA169	CRT BOARD
K-BOARD	TNP2AA171AD	KEY BOARD
G-BOARD	TNP2AA170AD	FRONT A/V

NOTE

When ordering a replacement board assembly, append an S to the board number

EXAMPLE

To order the A Board, the replacement board is TNP2AH061ADS

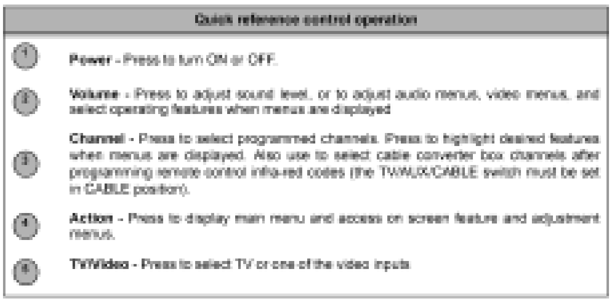
NOTE:

The DG-Board is non-serviceable. If this board is defective, replace it with a new board.

TOP PREVIOUS NEXT

6 TV Location of controls

TOP PREVIOUS NEXT

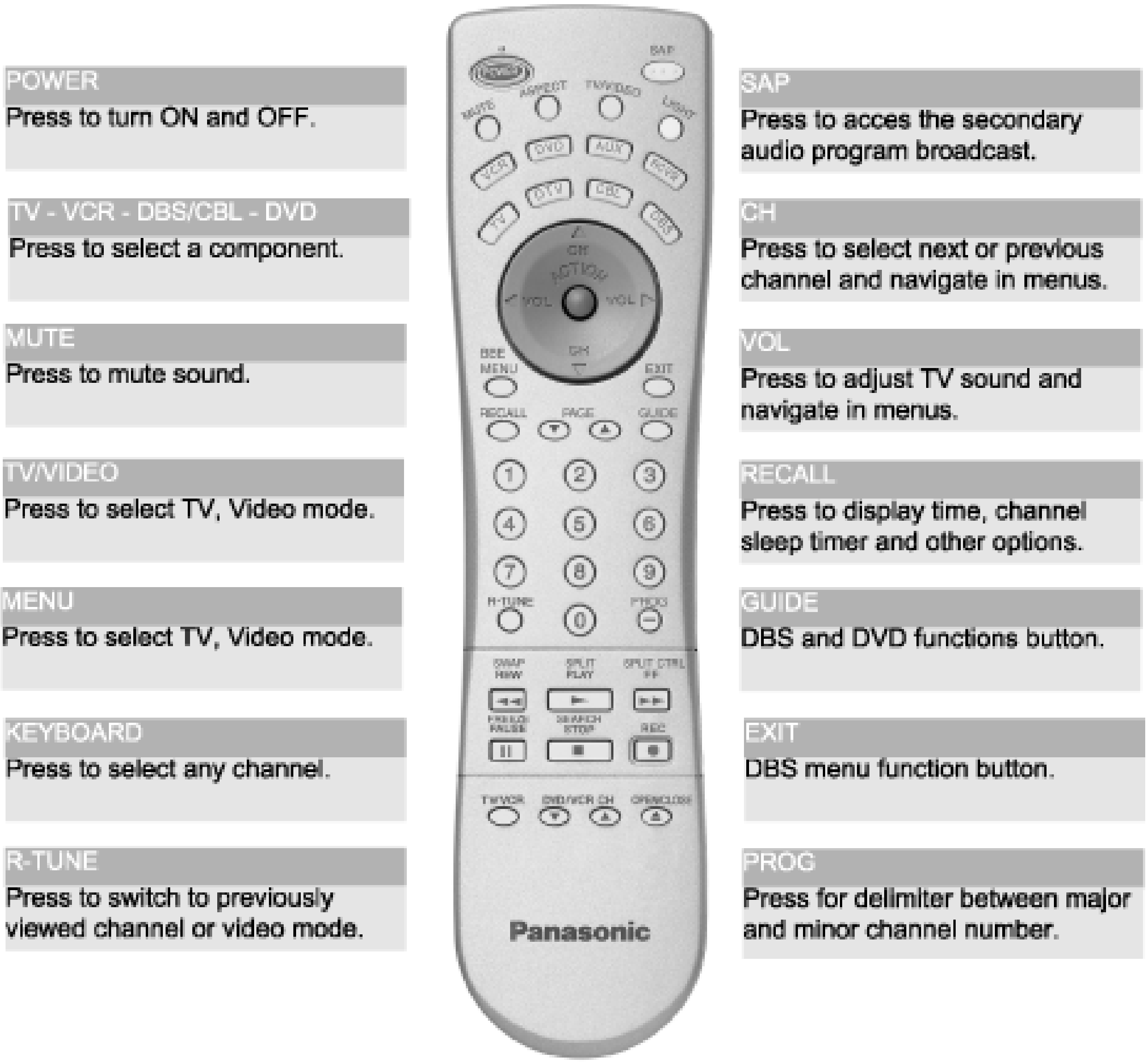


Quick reference control operation	
①	**Power** - Press to turn ON or OFF.
②	**Volume** - Press to adjust sound level, or to adjust audio menus, video menus, and select operating features when menus are displayed
③	**Channel** - Press to select programmed channels. Press to highlight desired features when menus are displayed. Also use to select cable converter box channels after programming remote control infra-red codes (the TV/AUX/CABLE switch must be set in CABLE position).
④	**Action** - Press to display main menu and access on screen feature and adjustment menus.
⑤	**TV/Video** - Press to select TV or one of the video inputs.

TOP PREVIOUS NEXT

7 Location of controls (EUR7603ZF0 remote)

TOP PREVIOUS NEXT


POWER
SAP
MUTE
ASPECT
TV/VIDEO
LIGHT
VCR
DVD
AUX
RCVR
DTV
CBL
TV
DBS
CH
ACTION
VOL
VOL
CH
DBS MENU
EXIT
RECALL
PAGE
GUIDE
1
2
3
4
5
6
7
8
9
R-TUNE
0
PROG
SWAP REW
SPLIT PLAY
SPLIT CTRL FF
FREEZE PAUSE
SEARCH STOP
REC
TV/VCR
DVD/VCR CH
OPEN/CLOSE
Panasonic

POWER
Press to turn ON and OFF.

TV - VCR - DBS/CBL - DVD
Press to select a component.

MUTE
Press to mute sound.

TV/VIDEO
Press to select TV, Video mode.

MENU
Press to select TV, Video mode.

KEYBOARD
Press to select any channel.

R-TUNE
Press to switch to previously viewed channel or video mode.

SAP
Press to acces the secondary audio program broadcast.

CH
Press to select next or previous channel and navigate in menus.

VOL
Press to adjust TV sound and navigate in menus.

RECALL
Press to display time, channel sleep timer and other options.

GUIDE
DBS and DVD functions button.

EXIT
DBS menu function button.

PROG
Press for delimiter between major and minor channel number.

Note:

For additional information about this remote please refer to the owner s manual section remote operation, listed on the parts list section.

TOP PREVIOUS NEXT

8 Auto diagnosis feature

TOP PREVIOUS NEXT

This receiver incorporates a new self diagnosis feature. With this new feature will be easier for the technician to detect the failures. There is a LED located by the keyboard on the front panel, this LED will start flashing when a failure is detectedby the circuits located in specific areas, depending on how many times the LED is flashing, this will tell you what circuit should be checked. Make a count of flashing and see the table shown below. Please use this feature effectively especially forintermittent problems.

SOS of front LED

FLASHES	POSSIBLE CIRCUIT	SOS
1	POWER+140	140 OCP
2	LOW B+ D.C.	SOS 2
4	HI VOLTAGE HHS	HHS
5	IC4511	GC2M
6	IC4518	GC2S
8	AUDIO AMP	SOS 4

AFTER THE COUNT

Proceed to check that area, verify what board is the problem located, this way the area to check will be reduced until the failure is found.

TOP PREVIOUS NEXT

9 EEPROM copy jig

TOP PREVIOUS NEXT

This CTV has a feature that allows to clone or back-up main EEPROM data adjustments from a CTV to other by connecting a jig to the CTV set. A jig part number TXFJIG02SER, is available through Matsushita/Panasonic Services.

Preparation:

To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into A15 connector located on the A-Board.

Procedure to copy data:

1. Enter to service mode and display service menu.
2. Select AREA DAC and then press ACTION button on remote to enter. Press VOL right/left to select one of the following options then press ACTION:
    - Select ALL to copy all main EEPROM data
    - Select ADJ to copy only adjustment data.
    - Select FIX to copy only fix data
3. To copy data from main EEPROM to jig, select IN→EX DAC and press ACTION button on remote.
4. To copy data from jig to main EEPROM, select EX→IN DAC and press ACTION button on remote.

TOP PREVIOUS NEXT

10 Dissasembly for service

TOP PREVIOUS NEXT

Back cover

Remove all the screws marked with an arrow (←) from the back of the receiver

NOTE

Screw configuration, type, and number of screws vary depending on the model of the receiver serviced and the application; various models are covered in this manual. Use same hardware when reassembling the receiver.

- 4 screws at the top edge of the receiver.
- screws by the A/V cover.
- 1 screw at the lower part of TV.
- 1 screw at each lower corner of the receiver.

NOTE

Extensions for board connectors may be needed to take voltages on some boards, please see parts list section for part numbers in this service manual.

A-Board - Main chassis

The A-Board assembly rest on a chassis tray along with the D-Board.

Slide chassis tray out. Gently lift the tray and pull out. Disconnect plug connectors; release wire ties and holders as required for complete chassis removal.

1. A-Board is secured to the chassis tray with screws.
2. The A-Board is mated to the D-Board by flexible connectors and to G-Board: A6, A7 & A8 (D6, D7 & D8 on the D-Board, respectively) and A1, A2 & A3 (G1, G2 & G3). To remove either boards, unplug the connectorson the A-Board.

   NOTE

Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

D-Board - Deflection

The D-Board assembly rest on a chassis tray along with the A-Board.

Slide chassis tray out. Gently lift the tray and pull out. Disconnect plug connectors; release wire ties and holders as required for complete chassis removal.

1. D-Board is secured to the chassis tray with screws.
2. The D-Board is mated to the A-Board and G-Board by flexible connectors: D6, D7 & D8 (A6, A7 & A7 on the A-Board, respectively) and D9 (G40 on the G-Board). To remove either boards, unplug the connectors.

   NOTE

   Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal

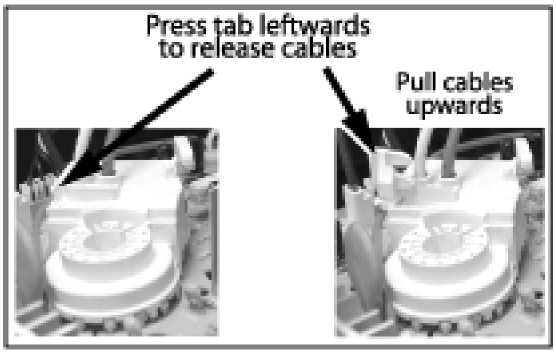
L-Board - CRT output

Plugs into the socket on the CRT neck.

To remove this board, first unplug the board from the CRT neck, then disconnect L1, L2 and L3 connectors, to disconnect the focus F1(red cable) & F2 (white cable) cables from the CRT socker, pull the tab and release the cables (see figure).Disconnect L10, L11, L12, L14 & L15 by inserting a wire in both holes then pull the cable out.

To reinsert back the cables, remember the original position of cables, F1 (red cable) goes to A on the CRT socket and F2 (white cable) goes to B on the CRT socket.

F1 and F2 cables release



DG-Board

The DG-Board is assembled on the main chassis (A-Board) plugged at the A13 and A14 (DG3 and DG4 respectively) connectors.

NOTE

This board is not-serviceable.
When removing this board pull carefully.

DF-Board

Plugs onto the right side of the D-Board at D14 and D16 connectors (P2, P11, P12 and P3 on P-Board, respectively); First remove the screw that holds the metal board, from the flyback and from the chassis tray and then use a flat head screwdriverto release the connector locking tabs and pull upwards the board.

G-Board

Mated to A-Board by three flexible connectors A1, A2, A3 and D9 from D-Board. To remove this board, first unplug the flexible connectors, then RT1 and G5 connectors, then pull upwards the board while unlock the tabs from the chassis tray.

Buttons assembly

This assembly is hold with two screws to the front cabinet. To remove, pull out the chassis and remove the two screws from each side of the assembly.

Speakers

Each speaker is secured to a plastic base with 4 screws, and the plastic base is secured to the from cabinet with three screws. To remove the small speaker from the plastic base, unscrew the four screws; To remove the bigger speaker, disassemblythe plastic base by removing the five screws from the back of the plastic base.

NOTE

When reassembling speakers be sure to connect the speaker wires to the correct speaker lead (+) (-)

10.1 Disassembly for CRT replacement

TOP PREVIOUS NEXT

10.1 Disassembly for CRT replacement

TOP PREVIOUS NEXT

1. Discharge the CRT as instructed in the safety precautions section and remove 2nd anode button from the CRT.

2. Remove speaker modules (R and L)

3. Perform complete removal of chassis, as instructed in disassembly for service section.

   NOTE

   When remounting the CRT, reuse the metal sheet located in the lower part of the cabinet holding the CRT, hold with screws to the cabinet. This metal sheet is not supplied with the CRT replacement.

CRT replacement

1. Perform disassembly for CRT replacement procedure.

2. Insure that the CRT H.V. Anode button is discharged before handling the CRT. Read the safety precautions section on handling the picture tube.

3. Remove the components from the CRT neck and place the cabinet face down on a soft pad.

4. Note the original order for the CRT mounting hardware as they are remove from the CRT mounting brackets at each corner of the CRT.

5. Remove the CRT with the degaussing coil and the dag ground braid attached.

6. Note the original locations and mounting of the degaussing coil and the dag ground assembly to insure proper reinstallation on the replacement CRT.

   To remove and remount the degaussing coil:

   - Unhook the coil spring from the bottom corners of the CRT ears.

   - Release the braid loop from the upper corners of the CRT ears.

7. Mount the dag ground braid on the replacement CRT. Position the degaussing coil with new ties.

Dress coil as was on the original CRT.

8. Replace the components on CRT neck and reinstall into cabinet. Verify that all ground wires and circuit board plugs get connected.

   NOTE

   Reuse all the clampers and mounting brackets from the degauss coil and screen, and when remounting the degauss coil assure that is not touching the speakers, this can be done by placing some tape, this may cause mask vibration. The mounting brackets andclampers are not supplied with the replacements.

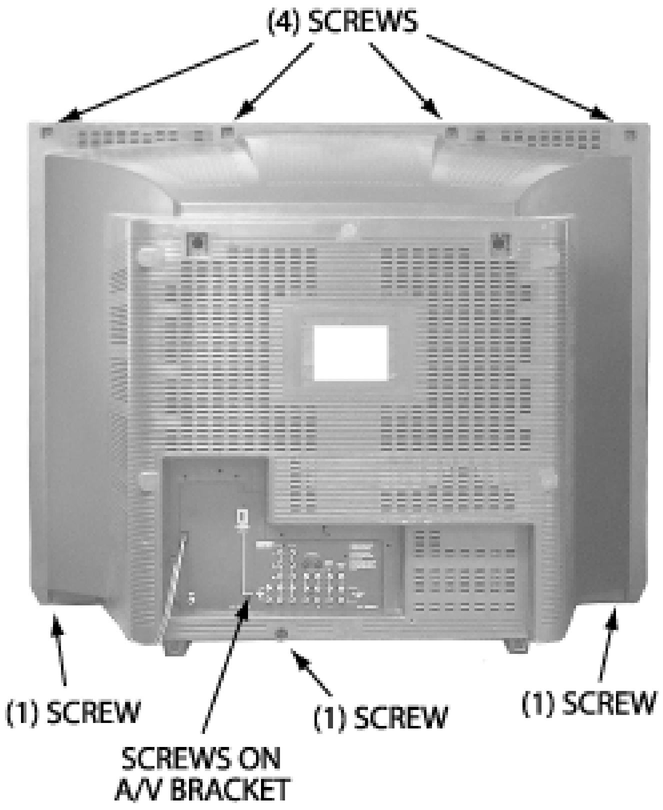
   IMPORTANT NOTICE

   When ordering the CRT, please order CRT and CRT kit also. Please see parts list section for part numbers

TOP PREVIOUS NEXT

11 Back cover removal

TOP PREVIOUS NEXT

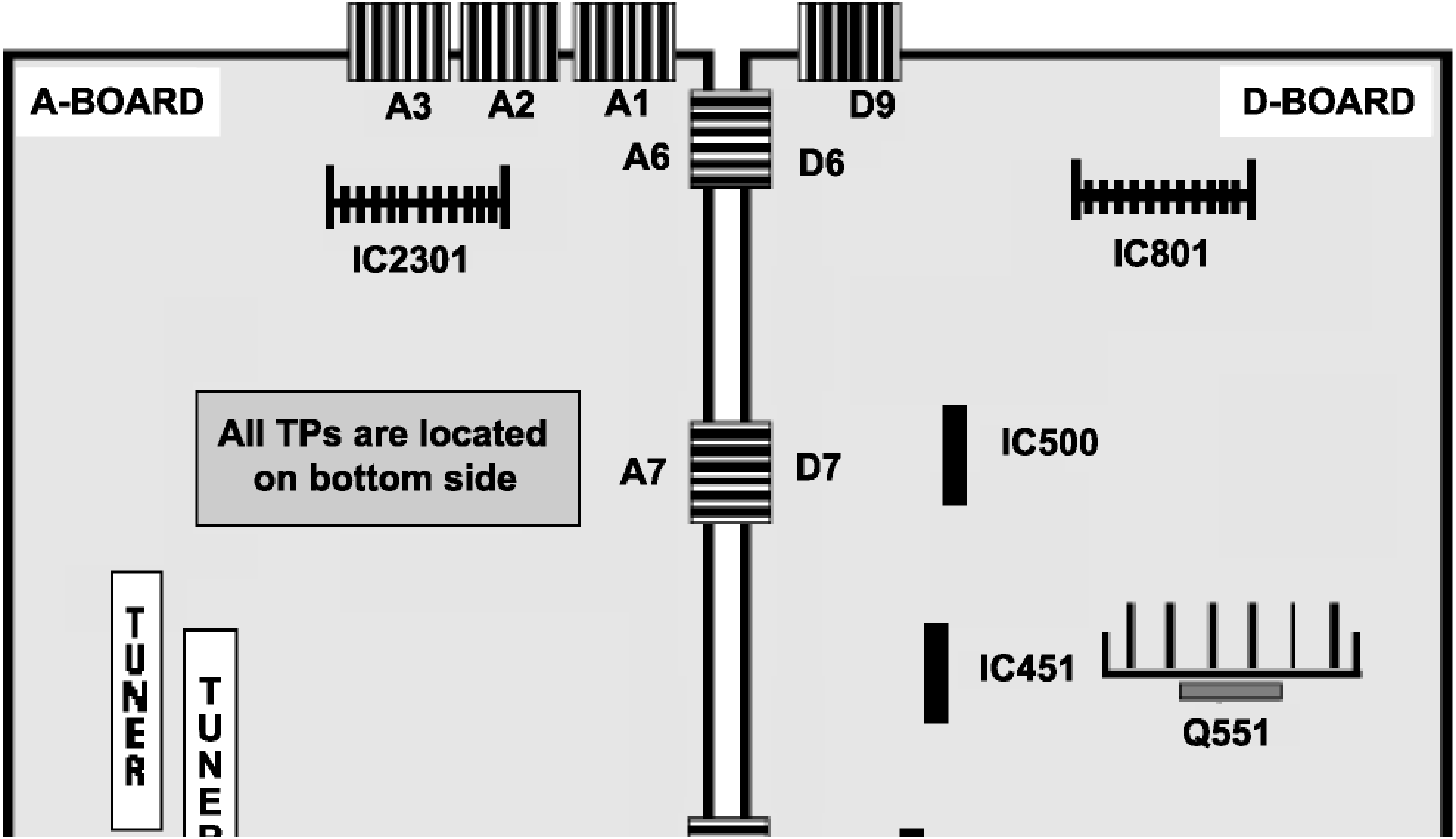

(4) SCREWS
(1) SCREW
SCREWS ON A/V BRACKET
(1) SCREW
(1) SCREW

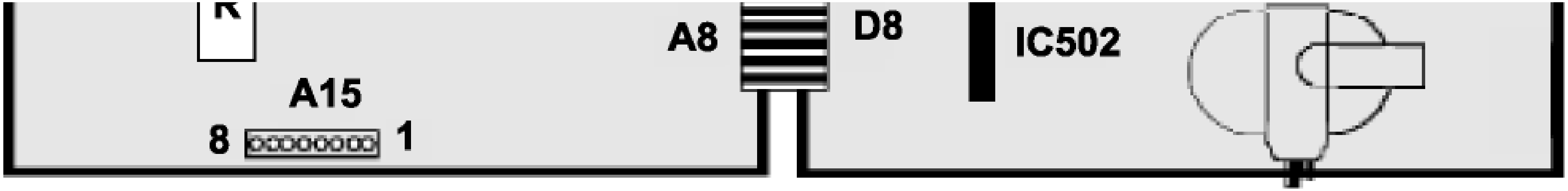
TOP PREVIOUS NEXT

12 Chassis service adjustment procedures

TOP PREVIOUS NEXT

All service adjustments are factory preset and should not require change unless controls and/or associated components are replaced.


A-BOARD
A3
A2
A1
D9
D-BOARD
A6
D6
IC2301
IC801
All TPs are located on bottom side
A7
D7
IC500
IC451
Q551
TUNER
TUNER



140.0_V B+ voltage check

1. Set the BRIGHT and PICTURE to minimum by using the PICTURE menu.
2. Connect the DVM on TPD50 (D-Board by and cold ground
3. Confirm that B+ voltage is 142V ± 6.0V. This voltage supplies B+ to the horizontal output and flyback circuits.

Source voltage chart

120V AC line input. Set the BRIGHT and the PICTURE to minimum by using the PICTURE menu. Use cold or hot ground for the (-) lead of the DVM as needed

A-BOARD	VOLTAGE
STBY 7V (BY IC2201) A-Board TPA9	7.5 ± 0.75V
MAIN 9V (BY IC006) A-Board TPA90	9.0V ± 0.5V
MAIN 5V (BY IC2301) A-Board TPA15	5.2V ± 0.3V
GC 2.5V (BY IC2856) A-Board TPA25	2.6V ± 0.2
STBY 3.3V (BY A13 CONNECTOR) A-Board TPA16	3.3V ± 0.2V
MAIN 3.3V (BY A21 CONNECTOR) A-Board TPA33	3.3V ± 0.2V
MAIN 1.8V (BY IC2451) A-Board TPA18	1.8V ± 0.2V

D-BOARD	VOLTAGE
+B2 (BYD14 CONNECTOR) D-Board TPD50	142.0 ± 6.0V
30V (BY IC807) D-Board TPD19	33.5 ± 2.0V
15V (BY IC802) D-Board TPD7	14.5 +1.5V -1.0
-15V (BY D9 CONNECTOR) D-Board TPD6	-15.5V ± 1.5V
SOUND+ (BY D6 CONNECTOR) D-Board TPD4	17.2V +1.5V -1.0
SOUND- (BY D6 CONNECTOR) D-Board TPD53	-16.2V +1.5V -1.0
210V (BY IC805) D-Board TPD34	211.0V ± 4.0V

MAIN 12V (BY D16 CONNECTOR) D-Board TPD22	12V ± 0.5V

High voltage check

1. Select an active TV channel and confirm that horizontal is in sync.
2. Adjust BRIGHTNESS and PICTURE using PICTURE icon menu so video just disappears.
3. Confirm B+ 142 ± 6.0V is within limit.
4. Using a high voltage meter confirm that the high voltage is 31.0kV ± 0.3kV

TOP PREVIOUS NEXT

13 Purity and convergence procedure

TOP PREVIOUS NEXT

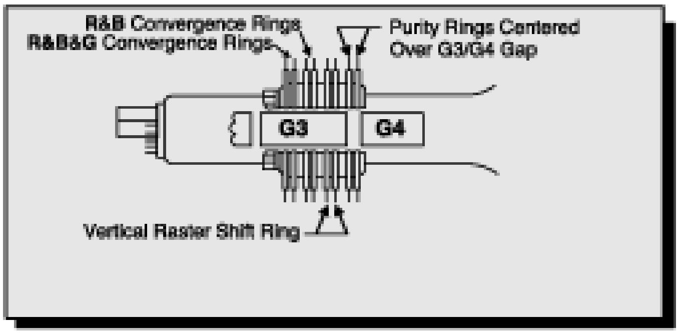
Adjustment is necessary only if the CRT or the deflection yoke is replaced or if the setting was disturbed. The complete procedure consists of:

1. Vertical raster shift adjustment.
2. Initial static convergence.
3. Setting the purity.
4. Final static convergence.

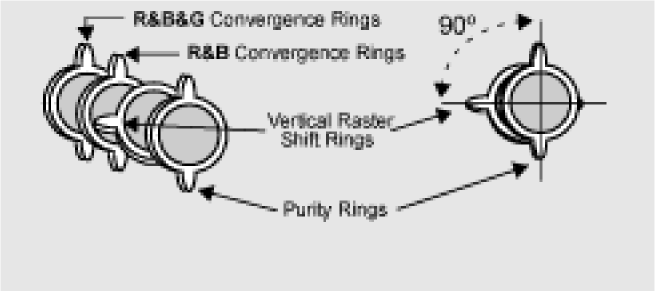
When the CRT or the yoke is replaced

Place the yoke on the CRT neck (do not tighten the clamp). Place the vertical raster shift tabs at 3 o clock (90° from the purity and convergence tabs

Description of rings


R&B Convergence Rings
R&B&G Convergence Rings
Purity Rings Centered Over G3/G4 Gap
G3
G4
Vertical Raster Shift Ring

Initial position of rings


R&B&G Convergence Rings
R&B Convergence Rings
90°
Vertical Raster Shift Rings
Purity Rings

Turn the receiver ON. Operate the receiver for 60 minutes using the first purity check field (white screen) to stabilize the CRT.

Fully degauss the receiver by using an external degaussing coil.

Slide the deflection yoke back and forth on the neck of the CRT until it produces a near white, uniform raster.

VERTICAL RASTER SHIFT ADJUSTMENT

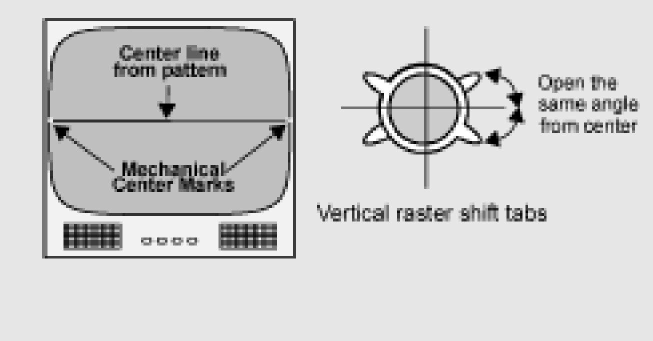
Apply a green pattern with a horizontal line, adjust the Deflection Yoke so that has no tilt, then secure it.

Adjust center line of the pattern with the mechanical center of the CRT, this center is determined by two marks at the side edges of the screen. To adjust the line, once the vertical raster shift tabs are place at 3 o clock to reduce itsmagnetic field effect open the tabs the same angle from the center, until the center line of the pattern becomes a straight line, centered with the marks of the CRT.

IMPORTANT NOTICE

Rings come along with deflection yoke in one piece.

Vertical raster shift adjustment



INITIAL CENTER STATIC CONVERGENCE

Connect a dot/cross hatch generator to the receiver and tune in a signal. Observe misconvergence at center of the screen only.

Adjust the R&B pole magnets; by separating tabs and rotating to converge blue with red.

Adjust the R&B and R&B&G pole magnets: by separating tabs and rotating to converge blue and red (magenta) with green.

NOTE

Precise convergence at this point is not important.

PURITY ADJUSTMENT

When the receiver is in the serviceman mode for making electronic adjustments, press the RECALL button on the remote control to enter purity check. (See the service adjustments electronic controls procedure).

Operate the receiver for 60 minutes using the first purity check field (white screen) to stabilize the CRT.

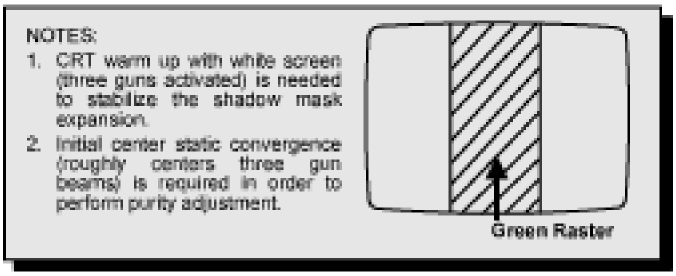
Fully degauss the receiver by using an external degaussing coil

Press the RECALL button on the remote control again until the purity check (green screen) appears.

Loosen the deflection yoke clamp screw and move the deflection yoke back as close to the purity magnet as possible.

Adjust the purity rings to set the vertical green raster precisely at the center of the screen

Green raster adjustment



NOTES:

1. CRT warm up with white screen (three guns activated) is needed to stabilize the shadow mask expansion.
2. Initial center static convergence (roughly centers three gun beams) is required in order to perform purity adjustment.

Slowly move the deflection yoke forward until the best overall green screen is displayed.

Tighten the deflection yoke clamp screw.

Press the RECALL button on the remote control again until the purity check blue and red screens appear and observe that good purity is obtained on each respective field.

Press the RECALL button on the remote control again until purity check (white screen) appears. Observe the screen for uniform white. If purity has not been achieved, repeat the above procedure.

FINAL CONVERGENCE PROCEDURE

NOTE

Vertical size and focus adjustments must be completed prior to performing the convergence adjustment. Connect a dot pattern generator to the receiver. The brightness level should not be higher than necessary to obtain a clear pattern.

Converge the red and the blue dots at the center of the screen by rotating the R&B pole static convergence magnets.

Align the converged red/blue dots with the green dots at the center of the screen by rotating the R&B&G pole static convergence magnets. Melt wax with soldering iron to fix the magnets.

Slightly tilt vertically and horizontally (do not rotate) the deflection yoke to obtain a good overall convergence.

If convergence is not reached at the edges, insert permalloy in the DY corners to achieve proper convergence. Recheck for purity and readjust if necessary.

After vertical adjustment of the yoke, insert wedge at 11 o clock position, then make the horizontal tilt adjustment.

Secure the deflection yoke by inserting four side wedges.

Apply adhesive between tab (thin portion) of wedge and CRT and place tape over the tab to secure to the CRT.

13.1 DYNAMIC CONVERGENCE ADJUSTMENT

13.2 Permalloy convergence corrector strip (Part No. 0FMK014ZZ)

13.3 DAF adjustment (Dynamic focus adjustment)

13.1 DYNAMIC CONVERGENCE ADJUSTMENT

TOP PREVIOUS NEXT

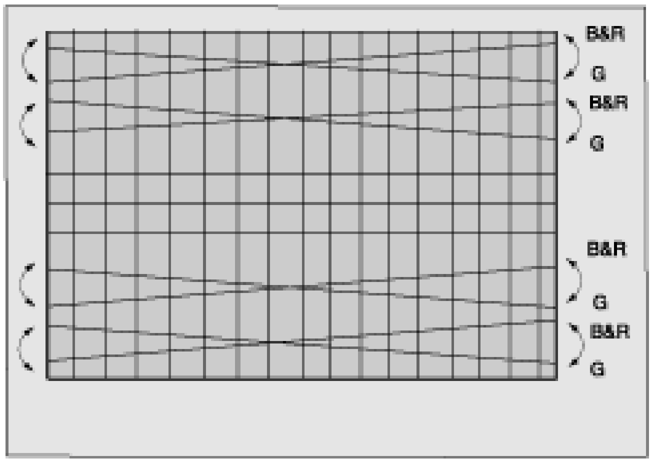
Use this for a precisely overall convergence adjust at the edges.

DY(YHC, YV, XV) ADJUSTMENT

YV ADJUSTMENT
(VR1 FOR HORIZONTAL DYNAMIC CONVERGENCE)

1. Apply a crosshatch pattern.
2. Adjust contrast and brightness customer controls to obtain a correct picture.
3. With a driver adjust VR1 (located in deflection yoke board to obtain a proper corvergence at top and bottom of the screen

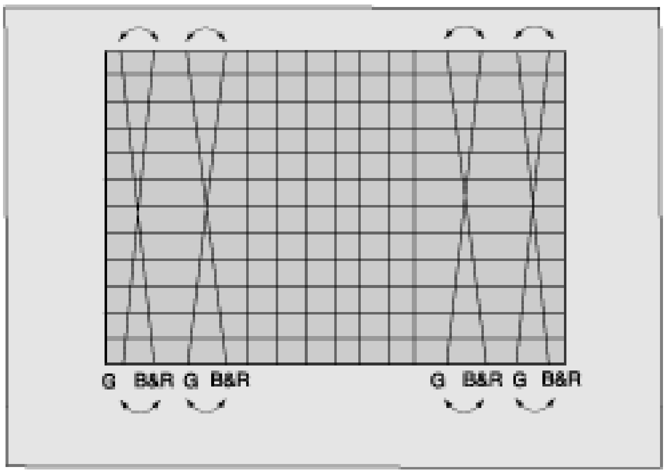
VR1 adjustment (YV)



YH Adjustment
(VR2 for vertical dynamic convergence)

1. Apply a crosshatch pattern.
2. Adjust contrast and brightness customer controls to obtain a correct picture.
3. With a driver Adjust VR2 (located in deflection yoke board to obtain a proper corvergence at left and right side of the screen.

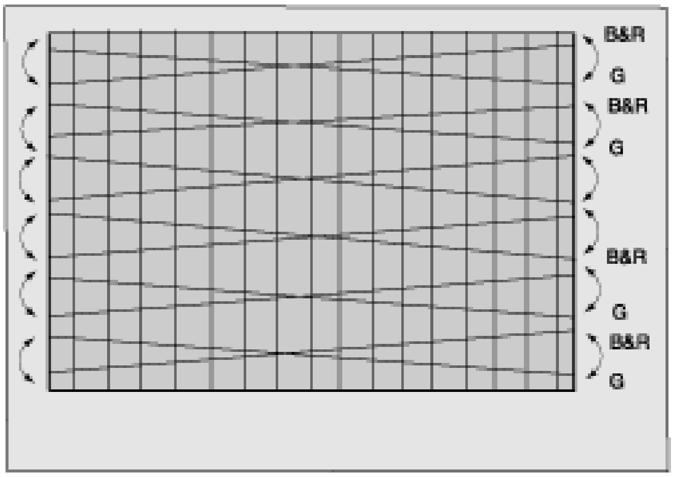
VR2 adjustment (YH)



XV Adjustment (precise adjustment)

1. Apply a crosshatch pattern.
2. Adjust contrast and brightness customer controls to obtain a correct picture.
3. With a driver adjust the coil located in deflection yoke board to obtain a proper convergence horizontally.

Coil adjustment (Xv)



NOTE

Apply a red pattern and confirm purity, if purity is poor, repeat purity adjustments.

TOP PREVIOUS NEXT

13.2 Permalloy convergence corrector strip (Part No. 0FMK014ZZ)

TOP PREVIOUS NEXT

This strip is used in some sets to match the yoke and CRT for optimum convergence. If the yoke or CRT is replaced, the strip may not be required.

First converge the set without the strip and observe the corners.

First converge the set without the strip and observe the corners.

If correction is needed:

1. Place strip between CRT and yoke, in quadrant needing correction. Slowly move it around for desired results.
2. Press adhesive tightly to the CRT and secure with tape.

TOP PREVIOUS NEXT

13.3 DAF adjustment (Dynamic focus adjustment)

TOP PREVIOUS NEXT

The purpose of this adjustment is to move the focus in the picture, so the focus is in balance in the whole picture (same level). Perform this adjustment as a visual adjustment, centering both waveforms, repeat adjustment until best adjustment isobtained.

PREPARATION

1. Picture settings normalized.
2. Picture mode set to VIVID.

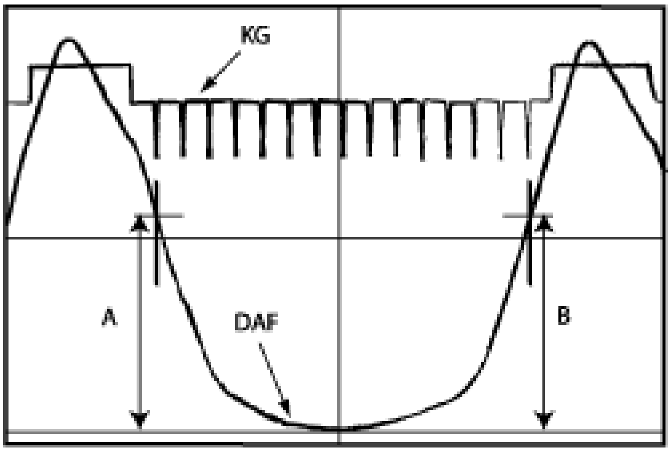
PREPARATION

1. Apply a crosshatch pattern.
2. Connect channel one of the oscilloscope with 100x1 probe to DAF OUT on J172 (D-Board).
3. Connect channel two of the oscilloscope with 10x1 probe to KG (L-Board).
4. If the the points A and B are different adjust, in service mode, adjust (HDAFS) DATA so that become the same position.
5. Apply a 1080i crosshatch pattern and repeat from step 1 to step 4.

   NOTE

   Both waveforms should be centered. Upper waveform could be different depending on the pattern applied

DAF adjustment



Other method (DAF adjustment)

PREPARATION

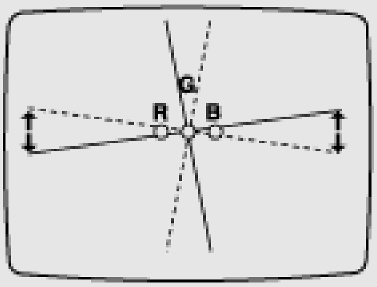
1. Picture settings normalized.
2. Picture mode set to VIVID.

PROCEDURE

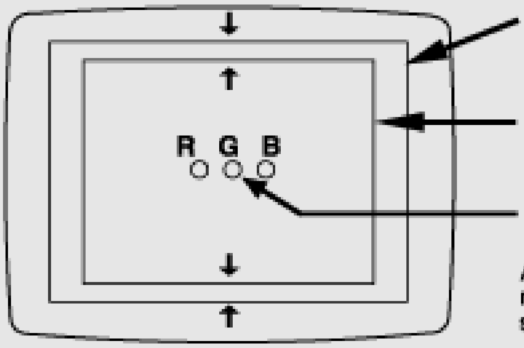
1. Apply a crosshatch pattern.
2. Put a mark in the focus control (on fly-back), so the control can be put back in the original position.
3. Turn the focus control (fly-back) fully, so the image is out focus.
4. Then in service mode adjust (HDAFS) DATA, so the focus is moving from side to side in the picture.
5. Adjust (HDAFS) DATA so the picture looks in balance in left and right.
6. Turn focus (fly-back) control back to its original position.
7. Apply a 1080i crosshatch pattern and repeat from step 1 to step 6.

   ### NOTE

   Repeat adjustment until best adjustment is obtained. For best adjustment, use oscilloscope as described in previous adjustment method.



As the yoke is tilted vertically, the rasters produced by the outside guns rotate in opposite directions.

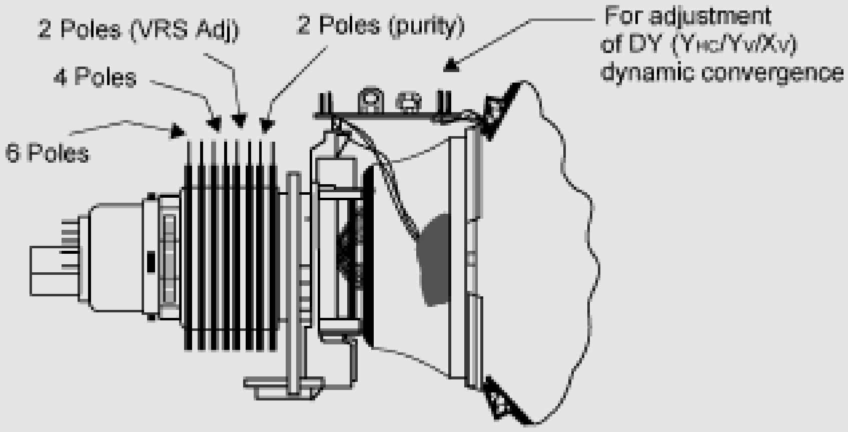


Raster produced from one of the outside electron beams

Raster from the other side electron beam

Static convergence magnets are set for center convergence

As the yoke is tilted horizontally, one raster gets larger while the other gets smaller


2 Poles (VRS Adj)
2 Poles (purity)
4 Poles
6 Poles
For adjustment of DY ($Y_{HC}/Y_V/X_V$) dynamic convergence

TOP PREVIOUS NEXT

14 Service mode (electronic adjustments)

TOP PREVIOUS NEXT

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed byusing on screen display menu . (The service adjustment mode).

NOTE

It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiarwith the procedure, the flow chart for service mode may be used as a quick guide.

Quick entry to service mode

When minor adjustments need to be done to the electronic controls, the method of entering the service mode without removal of the cabinet back is as follows using the remote control:

1. Select SET-UP icon and select CABLE mode.
2. Select TIMER icon and set SLEEP time for 30 Min.
3. Exit menus.
4. Tune to the channel 124.
5. Adjust VOLUME to minimum (0).
6. Press VOL → (decrease) on receiver. Red CHK appears in upper corner.

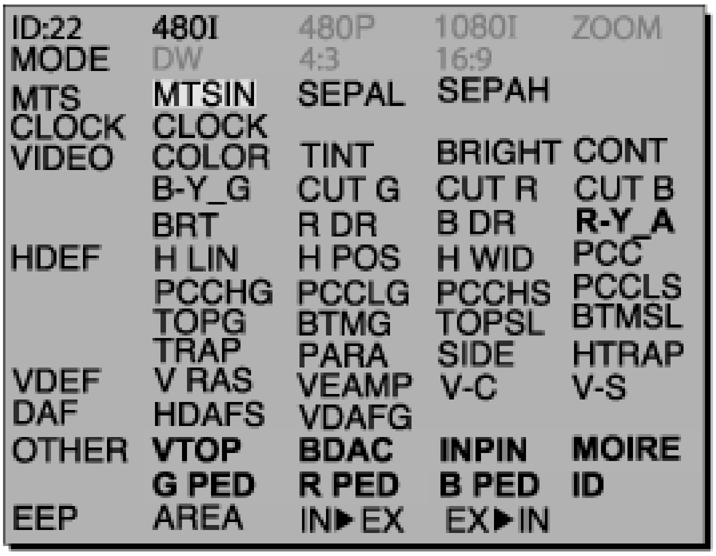
   NOTE

   After receiver is set into service mode, set TIMER back to NO.

   To toggle between aging and service modes:

   While the CHK is displayed on the left top corner of the CRT, pressing ACTION and VOL U on the TV simultaneously will toggle between the modes. Red CHK for serviceand yellow CHK for aging.

7. Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the volume right/left buttons and channel up/down buttons on the remote and ACTION to enter the adjustment.



ID:22	480I	480P	1080I	ZOOM
MODE	DW	4:3	16:9	
MTS	MTSIN	SEPAL	SEPAH	
CLOCK	CLOCK			
VIDEO	COLOR	TINT	BRIGHT	CONT
	B-Y_G	CUT G	CUT R	CUT B
	BRT	R DR	B DR	R-Y_A
HDEF	H LIN	H POS	H WID	PCC
	PCCHG	PCCLG	PCCHS	PCCLS
	TOPG	BTMG	TOPSL	BTMSL
	TRAP	PARA	SIDE	HTRAP
VDEF	V RAS	VEAMP	V-C	V-S
DAF	HDAFS	VDAFG		
OTHER	VTOP	BDAC	INPIN	MOIRE
	G PED	R PED	B PED	ID
EEP	AREA	IN▶EX	EX▶IN	

NOTE

Some adjustments are available only in some modes (480i, 480p, 1080i); it is needed to apply the format. A 1080i, 480p, 480i pattern can be obtained from Panasonic s TU-DST51 set-top box DTV decoder.

Exiting the service mode:

This TV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF or unplug the TV from A.C.

Other method

Press ACTION and POWER on the receiver simultaneously for at least 2 seconds.

The receiver momentarily shuts off; then comes back on tuned to channel 3 with a preset level of sound.

Any programmed channels, channels caption data and some others user defined settings will be erased when exited by pressing ACTION and POWER on receiver.

IMPORTANT NOTE

Always check that the TV exits the service mode.

To confirm colors

When in service mode (red CHK is displayed) press RECALL on the remote control to enter the purity field check mode

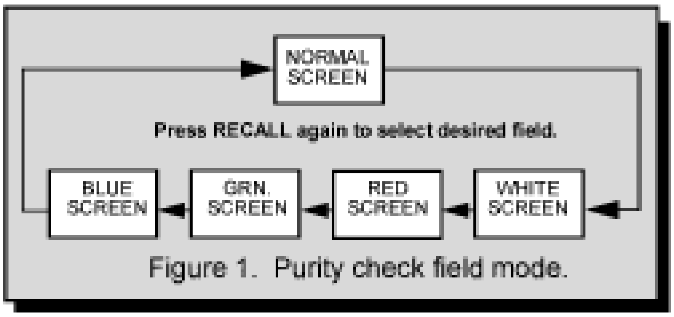

NORMAL SCREEN
Press RECALL again to select desired field.
BLUE SCREEN
GRN. SCREEN
RED SCREEN
WHITE SCREEN

Figure 1. Purity check field mode.

Entering service mode (open-back method)

While the receiver is connected and operating in normal mode, momentarily short test point FA1 (A15 pin 2) to cold ground (A-Board).

The receiver enters the aging mode.

Yellow letters CHK appear in the upper left corner of the screen.
(The volume right/left and channel up/down will adjust rapidly).

14.1 Service adjustment default values for service items

14.2 Instructional flow chart for service mode

TOP PREVIOUS NEXT

14.1 Service adjustment default values for service items

TOP PREVIOUS NEXT

REGISTER	DESCRIPTION	FORMAT		
		NTSC	1080i (16:9)	1080i (4:3)
MTSIN	INPUT LEVEL	21	N/A	N/A
SEPAL	LOW LEVEL SEPARATION	06	N/A	N/A
SEPAH	HIGH LEVEL SEPARATION	19	N/A	N/A
CLOCK	CLOCK	128	N/A	N/A
COLOR	COLOR	20	20	N/A
TINT	TINT	80	80	N/A
BRIGH	SUB-BRIGHTNESS	09 A0	09 A0	N/A
CONT	SUB-CONTRAST	02 A0	02 A0	N/A
B-Y_G	MAGENTA TINT ADJ	3D	3C	N/A
CUT G	GREEN CUT-OFF	02 16	02 16	N/A
CUT R	RED CUT-OFF	02 72	02 72	N/A
CUT B	BLUE CUT-OFF	01 EA	01 EA	N/A
BRT	BRIGHT	0A 34	0A 34	N/A
R DR	RED DRIVE	85	85	N/A
B DR	BLUE DRIVE	87	87	N/A
R-Y_A	R-Y_A	80	80	N/A
HLIN	HORIZONTAL LINEARITY	53	80	N/A
HPOS	HORIZONTAL POSITIONING	03 45	03 CE	N/A
HWID	HORIZONTAL WIDTH	B4	77	N/A
PCC	PINCUSHION CORRECTION	9B	B8	B3
PCCHG	PINCUSHION HIGH	38	3E	3E
PCCLG	PINCUSHION LOW	39	3E	3E
PCCHS	PINCUSHION HIGH	05	05	05
PCCLS	PINCUSHION LOW	05	05	05
TOPG	TOP CORNER PINCUSHION	58	5A	5A
BTMG	BOTTOM CORNER PINCUSHION	58	57	57
TOPSL	TOP CORNER PINCUSHION SLICE LEVEL	03	03	03
BTMSL	BOTTOM CORNER PINCUSHION SLICE LEVEL	03	03	03
TRAP	TRAPEZOID	80	85	85
PARA	PARALLELOGRAM	10	10	10

SIDE	E-W PINCUSHION ADJUSTMENT	16	15	15
HTRAP	HORIZONTAL TRAPEZOID	20	20	20
VRAS	VERTICAL POSITION	91	AA	A2
VEAMP	VERTICAL SIZE	01 62	00 B0	01 A4
V-C	VERTICAL LINEARITY	6E	78	78
V-S	VERTICAL S CORRECTION	56	56	56
HDAFS	HORIZONTAL DAF PHASE	00 A4	01 B4	N/A
VTOP	VTOP	00 D9	00 D1	00 FA
BDAC	BDAC	73	77	N/A
INPIN	INPIN	20	20	20
ID	ID	22	22	22
MOIRE	MOIRE	80	80	80
G PED	G PED	80	N/A	N/A
R PED	R PED	80	N/A	N/A
B PED	B PED	80	N/A	N/A

NOTE:

The above table shows the default values for the service items, this values may vary depending on the serviced TV.

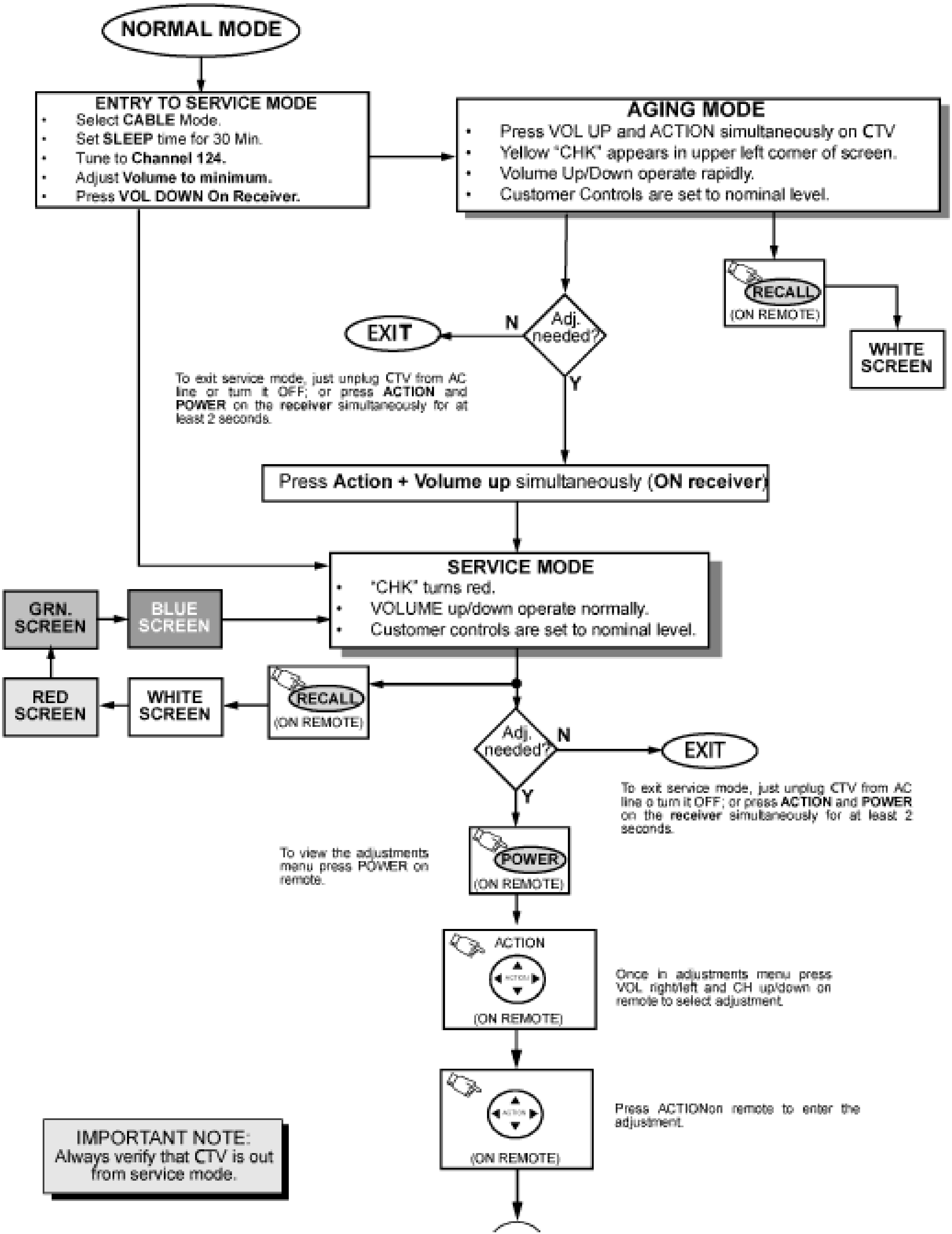
Important Note:

When changing ID register, message Unplug AC to activate will appear on the screen and the set mus
be unplugged.

TOP PREVIOUS NEXT

14.2 Instructional flow chart for service mode

TOP PREVIOUS NEXT


NORMAL MODE
ENTRY TO SERVICE MODE
Select CABLE Mode.
Set SLEEP time for 30 Min.
Tune to Channel 124.
Adjust Volume to minimum.
Press VOL DOWN On Receiver.
AGING MODE
Press VOL UP and ACTION simultaneously on CTV
Yellow "CHK" appears in upper left corner of screen.
Volume Up/Down operate rapidly.
Customer Controls are set to nominal level.
RECALL
(ON REMOTE)
WHITE SCREEN
Adj. needed?
N
Y
EXIT
Press Action + Volume up simultaneously (ON receiver)
SERVICE MODE
"CHK" turns red.
VOLUME up/down operate normally.
Customer controls are set to nominal level.
GRN. SCREEN
BLUE SCREEN
RED SCREEN
WHITE SCREEN
RECALL
(ON REMOTE)
Adj. needed?
N
Y
EXIT
POWER
(ON REMOTE)
ACTION
(ON REMOTE)
(ON REMOTE)

To exit service mode, just unplug CTV from AC line or turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

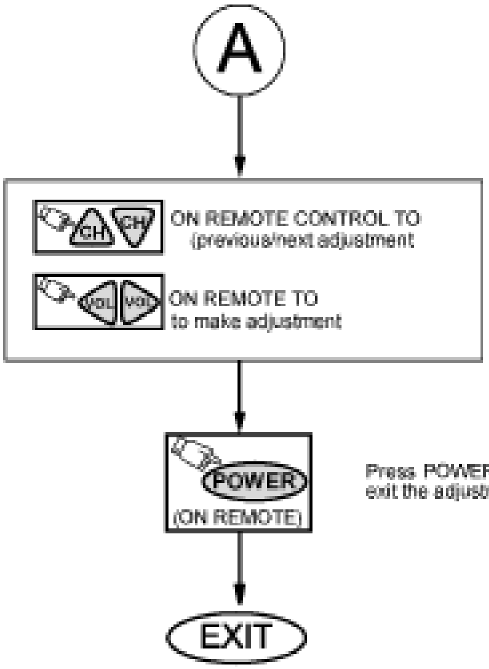
To exit service mode, just unplug CTV from AC line o turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

To view the adjustments menu press POWER on remote.

Once in adjustments menu press VOL right/left and CH up/down on remote to select adjustment.

Press ACTIONon remote to enter the adjustment.

IMPORTANT NOTE:
Always verify that CTV is out from service mode.


A
CH
CH
ON REMOTE CONTROL TO
(previous/next adjustment
VOL
VOL
ON REMOTE TO
to make adjustment
POWER
(ON REMOTE)
EXIT

Press POWER or ACTION on remote to exit the adjustment.

IMPORTANT NOTE:
Always verify that CTV is out from service mode.

To exit service mode, just unplug CTV from AC line or turn it OFF; or press **ACTION** and **POWER** on the **receiver** simultaneously for at least 2 seconds.

TOP PREVIOUS NEXT

15 Service adjustments (electronic controls)

TOP PREVIOUS NEXT

NOTE

Please correlate with available pattern on all adjustments

15.1 (NTSC) Sub-Brightness Service DAC adjustment (BRIGHT)

15.2 (1080i) Sub-Brightness Service DAC adjustment (BRIGHT)

15.3 (NTSC) Sub-Contrast Service DAC adjustment (CUT-G, CONT)

15.4 (1080i) Sub-Contrast Service DAC adjustment (CUT-G, CONT)

15.5 (NTSC) Color output adjustment Service DAC adjustment (COLOR, TINT)

15.6 (NTSC) Color output adjustment Service DAC adjustment (COLOR, TINT, B-Y_G)

15.7 (1080i) Color output adjustment Service DAC adjustment (COLOR, TINT

15.8 Color temperature adjustment (B / W Tracking) Service DAC Adjust. (CUT R) (CUT G) (CUT B) (R DR) (B DR)

15.9 Deflection adjustments

15.9.1 (480i / 480p) H-Center adjustment

15.9.2 (480i / 480p) Vertical linearity(V-C), V-Size and V-Position adjustment

15.9.3 (480i / 480p) V-S, V-Size adjustment

15.9.4 (480i / 480p) Trapezoid adjustment

15.9.5 (480i / 480p) Parallelogram adjustment

15.9.6 (480i / 480p) E-W PCC balance adjustment

15.9.7 (480i / 480p) PCC adjustment

15.9.8 (480i / 480p) Corner PCC adjustment

15.9.9 (480i / 480p) H-Size adjustment

15.9.10 (480i / 480p 16:9 and 480i / 480p split) Vertical linearity(V-C) and V-Position adjustment

15.9.11 (480i / 480p 16:9 and 480i / 480p split) V-S, V-Size adjustment

15.9.12 (480i / 480p 16:9 and 480i / 480p split) H-Trapezoid adjustment

15.9.13 (480i / 480p 16:9 and 480i / 480p split) Trapezoid adjustment

15.9.14 (480i / 480p 16:9 and 480i / 480p split) E-W PCC adjustment

15.9.15 (480i / 480p 16:9 and 480i / 480p split) PCC adjustment

15.9.16 (480i / 480p 16:9 and 480i / 480p split) Corner PCC adjustment

15.9.17 1080i letter and split) H-Center adjustment

15.9.18 (1080i letter and split) Vertical linearity(V-C) and V-Position adjustment

15.9.19 (1080i letter and split) V-S, V-Size adjustment

15.9.20 (1080i letter and split) Trapezoid adjustment

15.9.21 (1080i letter and split) Parallelogram adjustment

15.9.22 (1080i letter and split) PCC adjustment

15.9.23 (1080i letter and split) Corner PCC adjustment

15.9.24 (1080i letter and split) E-W PCC adjustment

15.9.25 (1080i letter and split) H-Width adjustment

15.9.26 (1080i full) H-Size, V-SIZE adjustment

15.9.27 (1080i full) Vertical linearity(V-C) and V-Position adjustment

15.9.28 (1080i full) V-S, V-Size adjustment

15.9.29 (1080i full) Trapezoid adjustment

15.9.30 (1080i full) Parallelogram adjustment

15.9.31 (1080i full) E-W PCC adjustment

15.9.32 (1080i full) Corner PCC adjustment

15.10 MTS circuit adjustmens

15.11 Clock adjustment (CLOCK)

15.12 Service Adjustments Mechanical Controls

TOP PREVIOUS NEXT

15.1 (NTSC) Sub-Brightness Service DAC adjustment (BRIGHT)

TOP PREVIOUS NEXT

Adjustment of this control is important for setting proper operation of customer brightness and picture controls. Do not adjust the SCREEN VR after the sub-brightness is set.

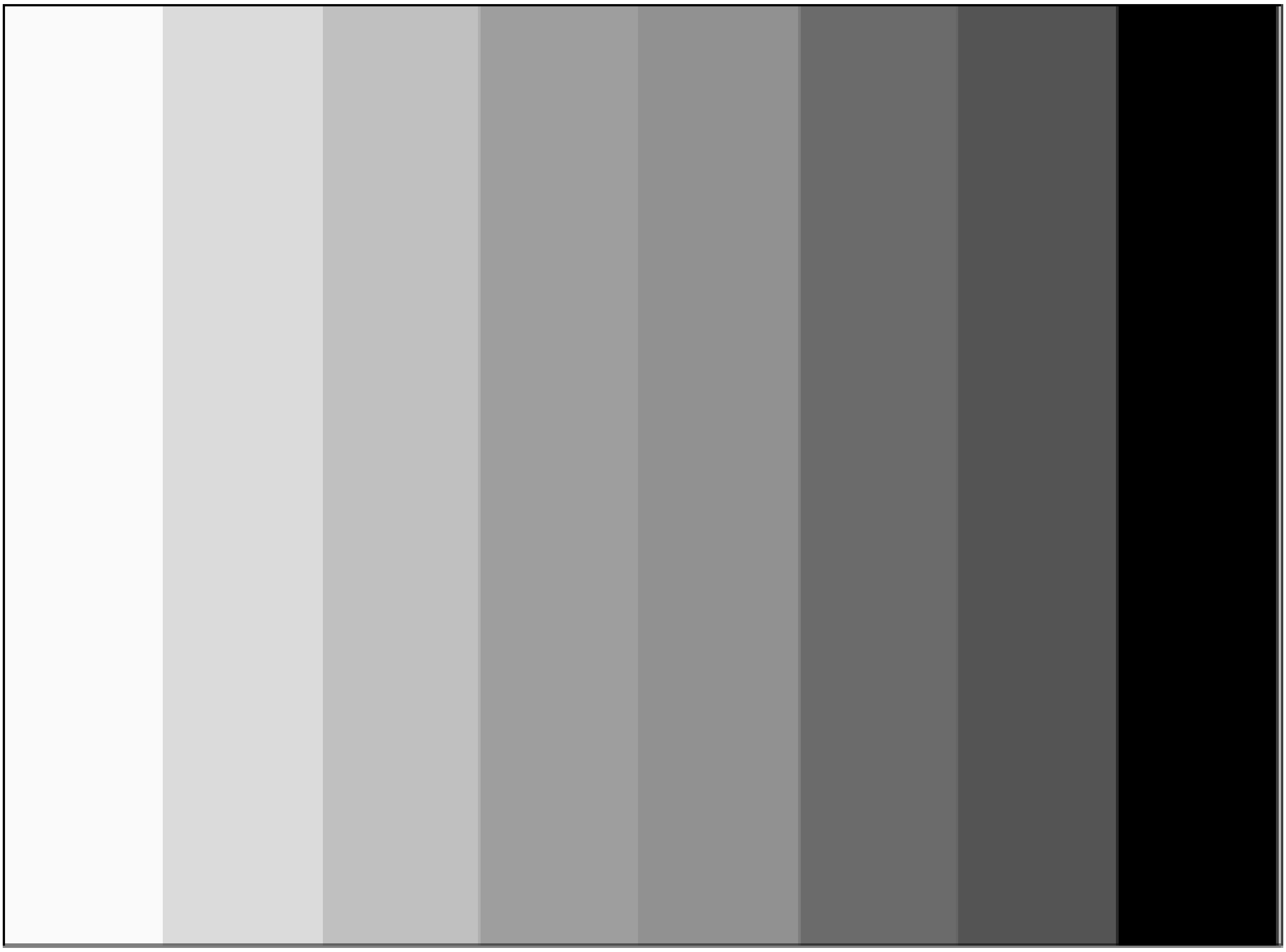
Preparation

1. Normalize picture settings.
2. Picture mode set to VIVID.
3. Switch NATURAL COLOR to OFF.
4. Switch COLOR TEMPERATURE to COOL.

Procedure

1. Apply a colorbar with no color pattern.
2. In the service mode for making electronic adjustments, select the DAC adjustment BRIGHT and adjust data so that 7.5IRE part is the same light output as the 3IRE part

Bars pattern



TOP PREVIOUS NEXT

15.2 (1080i) Sub-Brightness Service DAC adjustment (BRIGHT)

TOP PREVIOUS NEXT

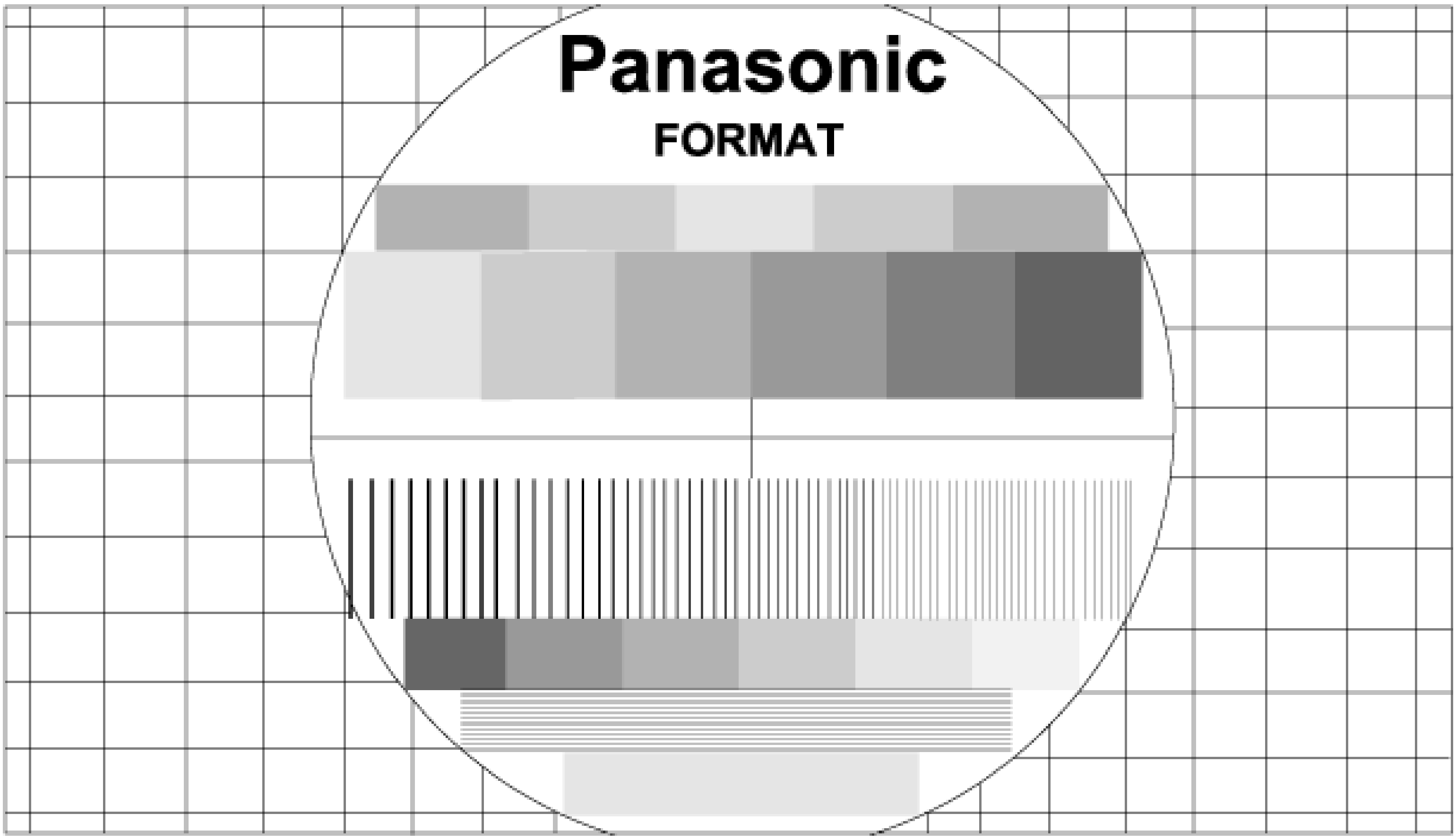
Adjustment of this control is important for setting proper operation of customer brightness and picture controls. Do not adjust the SCREEN VR after the sub-brightness is set.

Preparation

1. Normalize picture settings.
2. Picture mode set to VIVID.
3. Switch NATURAL COLOR to OFF.
4. Switch COLOR TEMPERATURE to COOL.

Procedure

1. Apply a colorbar with no color pattern.
2. In the service mode for making electronic adjustments, select the DAC adjustment BRIGHT and adjust data so that 7.5IRE part is the same light output as the 3IRE part


Panasonic
FORMAT

TOP PREVIOUS NEXT

15.3 (NTSC) Sub-Contrast Service DAC adjustment (CUT-G, CONT)

TOP PREVIOUS NEXT

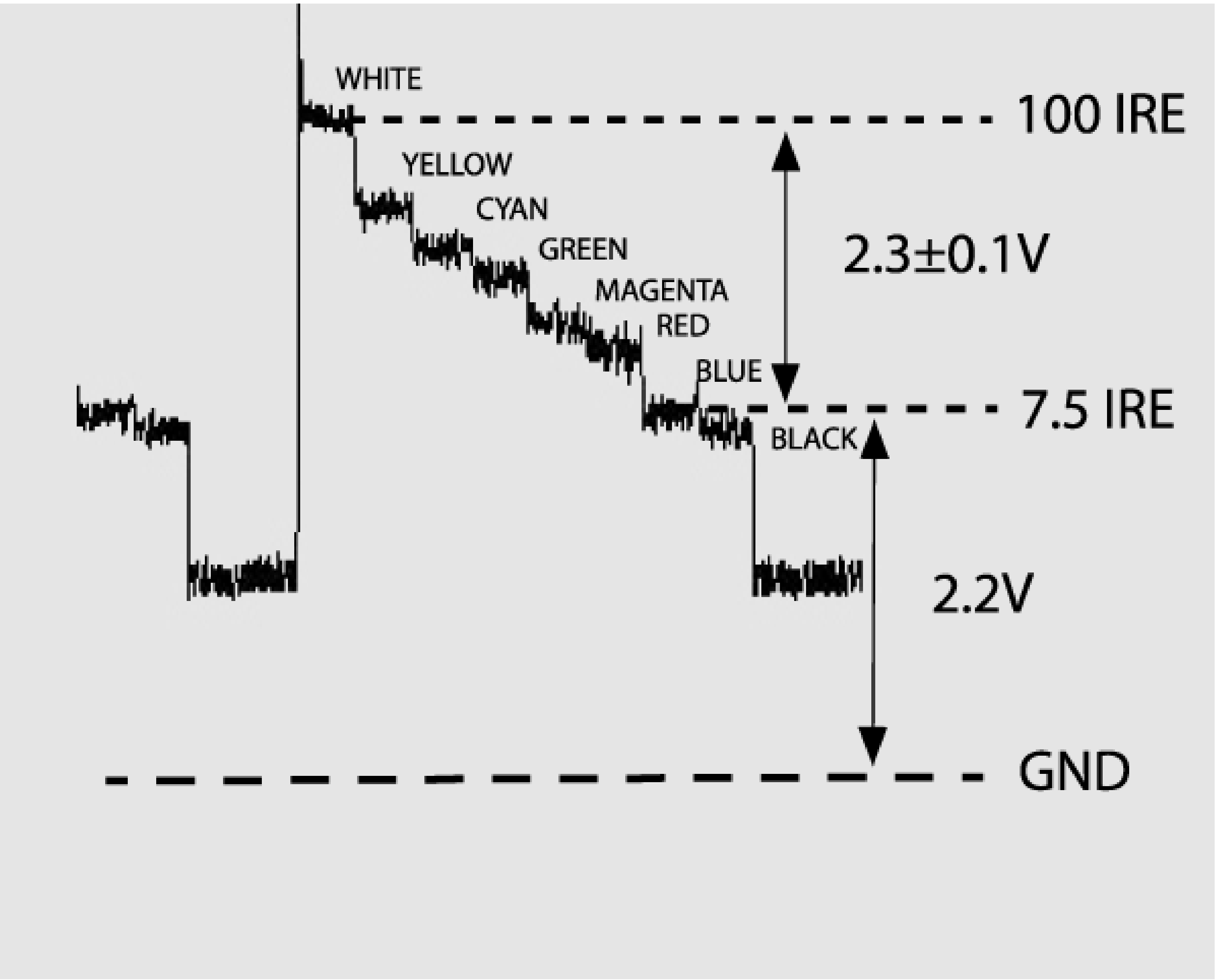
This adjustment is factory set. Do not adjust unless repairs are made to associated circuit, the CRT Board or when the CRT is replaced.

Preparation

1. Apply a colorbar pattern.
2. Set the PICTURE settings to normal.
3. Set color to minimum (no color on picture).
4. Set PICTURE mode to VIVID
5. Connect the oscilloscope to TP47G.

Procedure

1. In the service mode, select DAC for brightness adjustment BRIGH and set data to 1 D0 .
2. In service mode, select DAC for green cutoff adjustment CUT-G , and adjust data to obtain 2.2 V between 7.5IRE and GND level at TP47G. (See waveform detail)
3. In service mode, select DAC for contrast adjustment CONT , and adjust data to obtain 2.3±0.1V between 7.5IRE and 100IRE level at TP47G. (See waveform detail)


WHITE
100 IRE
YELLOW
CYAN
GREEN
2.3±0.1V
MAGENTA
RED
BLUE
7.5 IRE
BLACK
2.2V
GND

TOP PREVIOUS NEXT

15.4 (1080i) Sub-Contrast
Service DAC adjustment (CUT-G, CONT)

TOP PREVIOUS NEXT

This adjustment is factory set. Do not adjust unless repairs are made to associated circuit, the CRT Board or when the CRT is replaced.

PREPARATION

1. Apply a 1080i pattern (colorbar no color).
2. Set the PICTURE settings to normal.
3. Set PICTURE mode to VIVID
4. Connect the oscilloscope to TP47G.

PROCEDURE

1. In the service mode, select DAC for brightness adjustment BRIGH to obtain 2.0V between 0 IRE and GND level at TP47G
2. In service mode, select DAC CONT , and adjust data to obtain 2.5±0.1V between 0 IRE and 100 IRE level at TP47G

TOP PREVIOUS NEXT

15.5 (NTSC) Color output adjustment Service DAC adjustment (COLOR, TINT)

TOP PREVIOUS NEXT

NOTE

if a rainbow pattern generator is available perform the following procedure; the next section describes the procedure with no rainbow pattern.

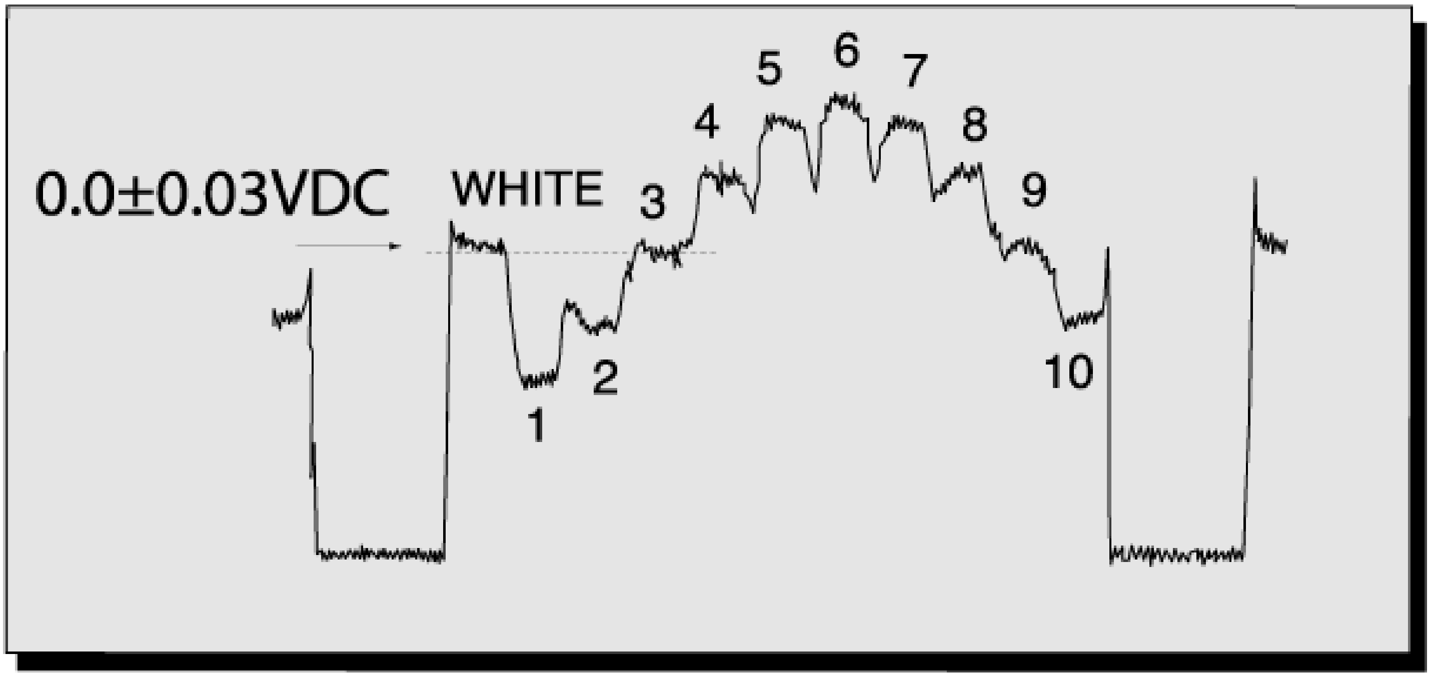
Make sure that sub-contrast adjustment was finished prior to perform this adjustment

PREPARATION

1. Normalize the picture settings.
2. Set picture mode to VIVID
3. Switch NATURAL COLOR to OFF.

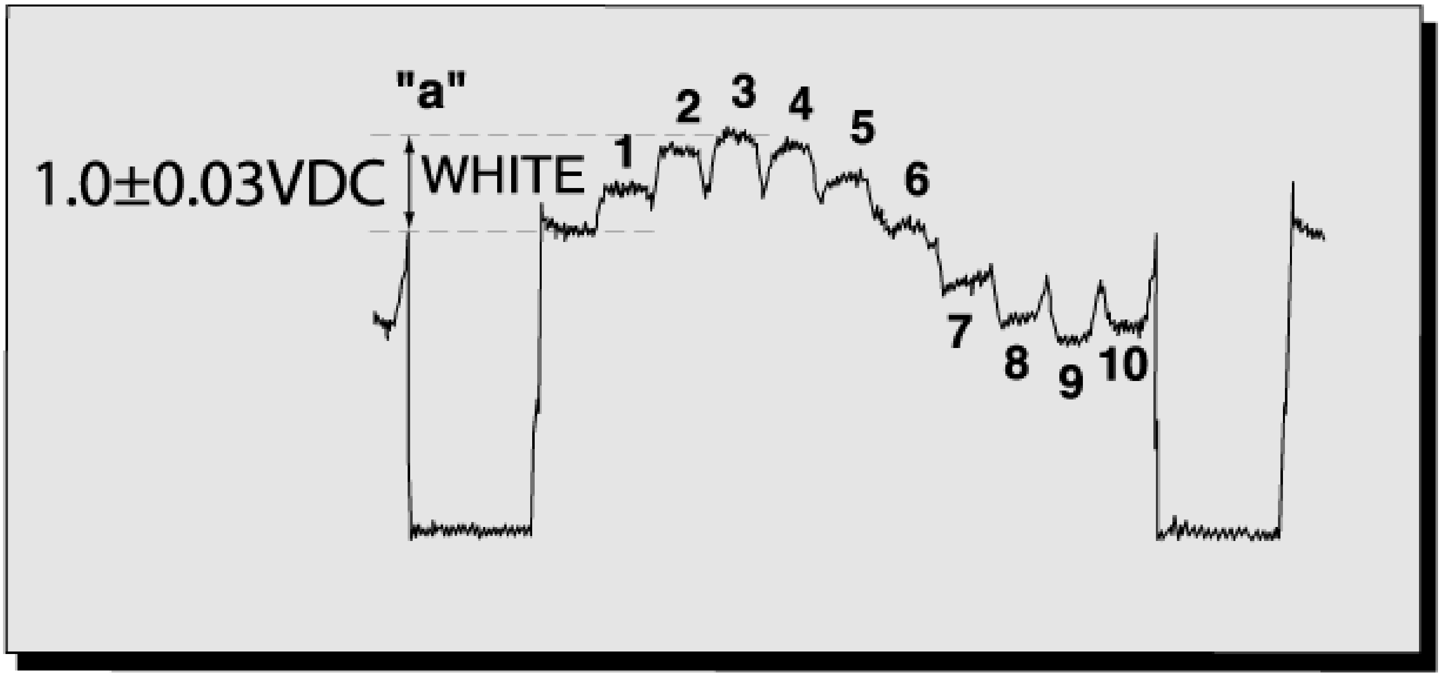
PROCEDURE

1. Apply a rainbow color bar pattern.
2. In service mode adjust R DR and B DR data to 80 .
3. Connect the oscilloscope to TP47B.
4. In service mode adjust TINT data so that the peak white is located at same level as peak 3 , within 0±0.03V. (See waveform detail)



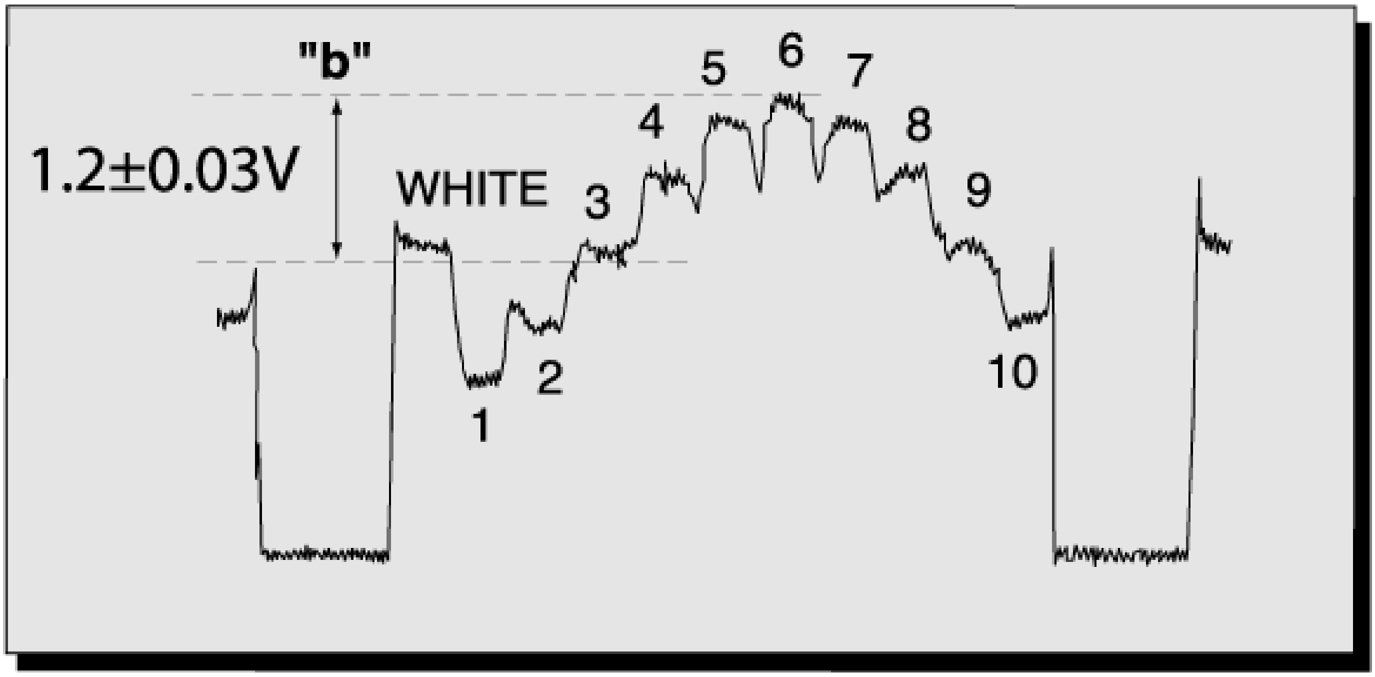
5. Connect the oscilloscope to TP47R.

6. In service mode adjust COLOR data so that the amplitude a is 1.0±0.03V.



7. Connect the oscilloscope to TP47B.

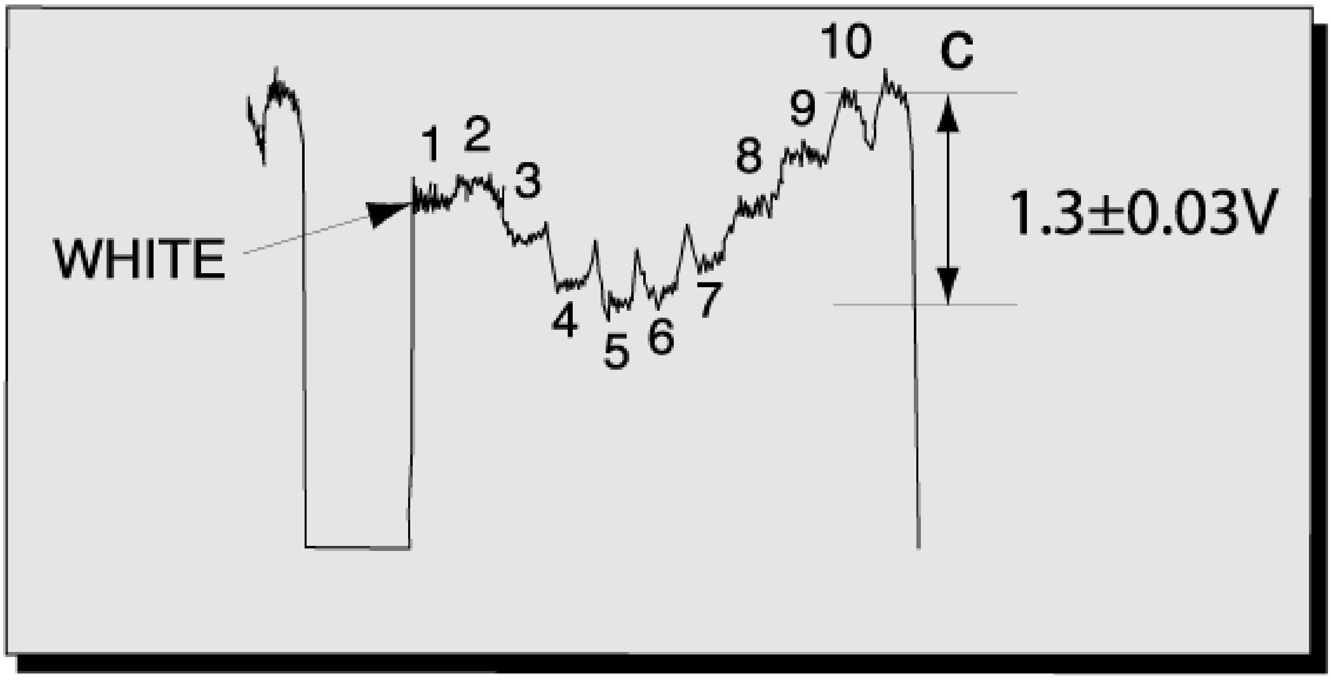
8. In service mode adjust B-Y G data so that the amplitude b is 1.2±0.03V (between 3rd and 6th peaks).



9. With oscilloscope still connected to TP47B, adjust TINT data so that the peak 9 is located at same level as peak 3 , within 0±0.03V, then increase TINT databy 9 steps.

10. Connect oscilloscope to TP47G.

11. In service mode adjust COLOR data so that the amplitude C is 0.92•0.02V.



12. Apply a studio color bar pattern and confirm that saturation and phase are normal (normal image).

TOP PREVIOUS NEXT

15.6 (NTSC) Color output adjustment Service DAC adjustment (COLOR, TINT, B-Y_G)

TOP PREVIOUS NEXT

NOTE

Color and tint adjustment sets the reference settings for the user controls; It is important to read the procedures.

(NO RAINBOW PATTERN)

Make sure that sub-contrast adjustment was finished prior to perform this adjustment

PREPARATION

1. Normalize the picture settings.
2. Set picture mode to VIVID
3. Switch NATURAL COLOR to OFF.

PROCEDURE

1. Apply a color bar pattern.
2. In service mode adjust R DR and B DR data to 80 .
3. In service mode adjust TINT data so that the color does not become greenish or redish.
4. In service mode adjust COLOR data so that the color level is not too high (saturated) or too low (tending to black and white).
5. In service mode adjust B-Y G data so that blue and green seem natural.
6. confirm that saturation and picture are normal (normal image).
7. If image is not satisfactory, repeat adjustment until the images is normal and natural

NOTE

The image can be compared against other set to see the image quality.

TOP PREVIOUS NEXT

15.7 (1080i) Color output adjustment Service DAC adjustment (COLOR, TINT

TOP PREVIOUS NEXT

Make sure that sub-contrast adjustment was finished prior to perform this adjustment

PREPARATION

1. Normalize the picture settings.
2. Set picture mode to VIVID
3. Switch NATURAL COLOR to OFF.

PROCEDURE

1. Apply a 1080i pattern or signal
2. In service mode adjust R DR and B DR data to 80 .
3. In service mode adjust TINT data so that the color does not become greenish or redish.
4. In service mode adjust COLOR data so that the color level is not too high (saturated) or too low (tending to black and white).
5. In service mode adjust B-Y G data so that blue and green seem natural.
6. confirm that saturation and picture are normal (normal image).
7. If image is not satisfactory, repeat adjustment until the image is normal and natural.

   NOTE

   The image can be compared against other set to see the image quality.

TOP PREVIOUS NEXT

15.8 Color temperature adjustment (B/W Tracking)
Service DAC Adjust.
(CUT R) (CUT G) (CUT B) (R DR) (B DR)

TOP PREVIOUS NEXT

Note:

Make sure that sub-contrast adjustment was done prior to this adjustment.

Minor Touch-Up Method

OBSERVE low and high brightness areas of a B/W picture for proper tracking. Adjust only as required for good gray scale and warm highlights .

1. LOW LIGHT areas - In service mode for making electronic adjustments, select CUT R, CUT G, CUT B and adjust the picture for gray.
2. HIGH LIGHT areas - In service mode for making electronic adjustments, select drive R DR, B DR and adjust the picture for warm whites.

Complete adjustment

PREPARATION

1. Turn the receiver ON and allow 30 minutes warm up at WHITE PATTERN.
2. Apply a color bar pattern (with no color).
3. Turn the SCREEN control (part of FBT T551) fully counterclockwise.
4. Preset the following service DACs for best results:
    - BRIGH________________________1 D0
    - CUT R________________________0 00
    - CUT B________________________0 00
    - R DR________________________80

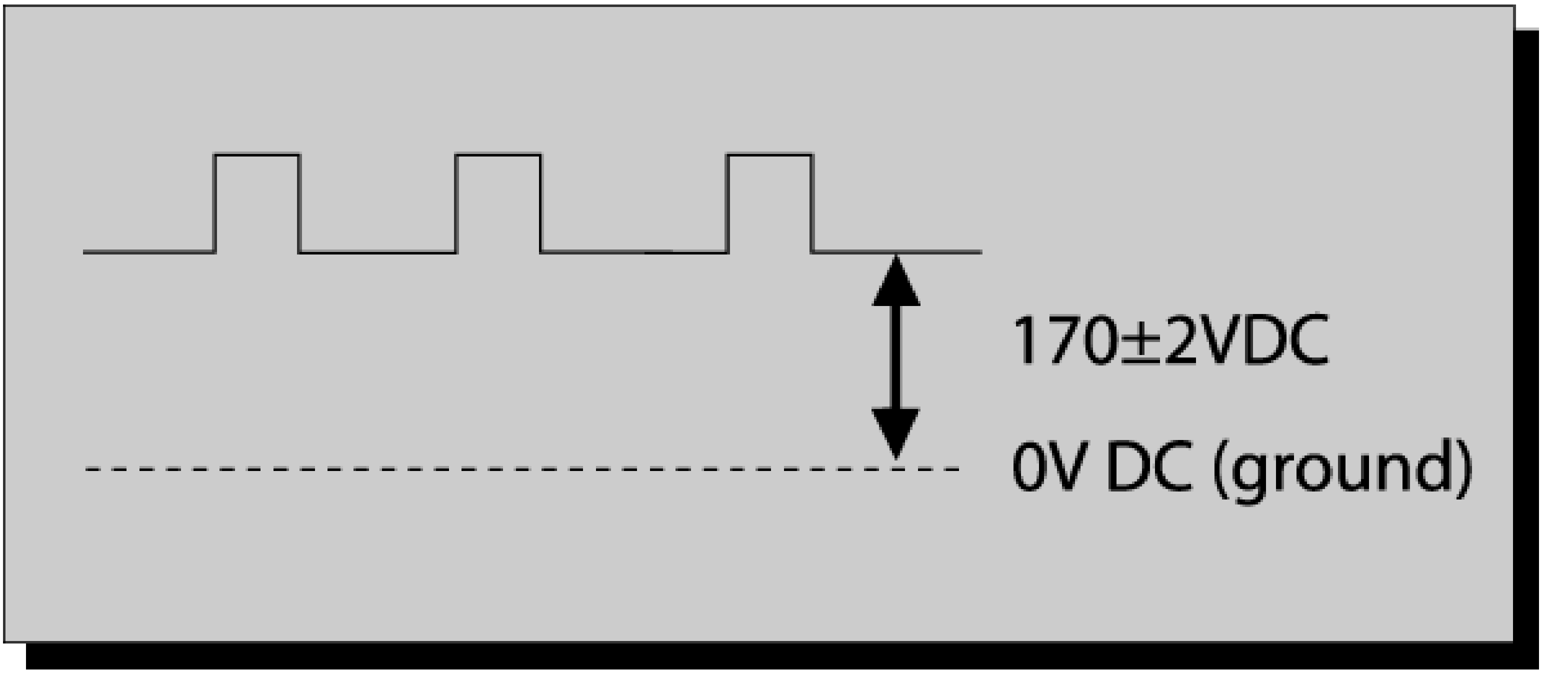
- B DR________________________80
- PICTURE SETTINGS__________NORMALIZED
- PICTURE MODE______________VIVID

PROCEDURE

1. Connect the oscilloscope to KG (CRT-Board).
2. In service mode for making electronic adjustment, select BRIGH DAC.
3. Press RECALL button on the remote control to collapse the raster. (service SW).
4. Connect oscilloscope to KG on L-Board and adjust service mode CUT-G DAC until 170±2V above DC ground is measured
5. Remove the probe from KG.
6. Turn screen clockwise slowly until color is slightly appeared.
7. Then adjust CUT R and CUT B until line becomes white.
8. Press RECALL button on the remote to restore the raster.
9. Adjust R DR and B DR so the white seems like white and black like black
10. Apply a normal signal and confirm that the image is normal and a good gray scale
11. If correction is needed perform minor touch-up method.

NOTE

This adjustment (NTSC) will adjust automatically 480p and 1080i formats, no need to adjust for these formats


170±2VDC
0V DC (ground)

TOP PREVIOUS NEXT

15.9 Deflection adjustments

TOP PREVIOUS NEXT

To reset deflection adjustments

To reset deflection adjustments to factory adjusted default, enter to service mode (with red CHK displayed), press POWER button on remote to display the service menu, then press and hold RECALL button for at least three seconds, a reset messagewill appear in the image.

Use this feature when deflection adjustment gets off adjustment to the point that it cannot be adjusted back easily.

NOTE

Deflection adjustment for 480i/480p, 480i/480p 16:9 and 480i/480p split, 1080i letter and split mode are provided differently.

15.9.1 (480i / 480p) H-Center adjustment

15.9.2 (480i / 480p) Vertical linearity(V-C), V-Size and V-Position adjustment

15.9.3 (480i / 480p) V-S, V-Size adjustment

15.9.4 (480i / 480p) Trapezoid adjustment

15.9.5 (480i / 480p) Parallelogram adjustment

15.9.6 (480i / 480p) E-W PCC balance adjustment

15.9.7 (480i / 480p) PCC adjustment

15.9.8 (480i / 480p) Corner PCC adjustment

15.9.9 (480i / 480p) H-Size adjustment

15.9.10 (480i / 480p 16:9 and 480i / 480p split) Vertical linearity(V-C) and V-Position adjustment

15.9.11 (480i / 480p 16:9 and 480i / 480p split) V-S, V-Size adjustment

15.9.12 (480i / 480p 16:9 and 480i / 480p split) H-Trapezoid adjustment

15.9.13 (480i / 480p 16:9 and 480i / 480p split) Trapezoid adjustment

15.9.14 (480i / 480p 16:9 and 480i / 480p split) E-W PCC adjustment

15.9.15 (480i / 480p 16:9 and 480i / 480p split) PCC adjustment

15.9.16 (480i / 480p 16:9 and 480i / 480p split) Corner PCC adjustment

15.9.17 1080i letter and split) H-Center adjustment

15.9.18 (1080i letter and split) Vertical linearity(V-C) and V-Position adjustment

15.9.19 (1080i letter and split) V-S, V-Size adjustment

15.9.20 (1080i letter and split) Trapezoid adjustment

15.9.21 (1080i letter and split) Parallelogram adjustment

15.9.22 (1080i letter and split) PCC adjustment

15.9.23 (1080i letter and split) Corner PCC adjustment

15.9.24 (1080i letter and split) E-W PCC adjustment

15.9.25 (1080i letter and split) H-Width adjustment

15.9.26 (1080i full) H-Size, V-SIZE adjustment

15.9.27 (1080i full) Vertical linearity(V-C) and V-Position adjustment

15.9.28 (1080i full) V-S, V-Size adjustment

15.9.29 (1080i full) Trapezoid adjustment

15.9.30 (1080i full) Parallelogram adjustment

15.9.31 (1080i full) E-W PCC adjustment

15.9.32 (1080i full) Corner PCC adjustment

15.9.1 (480i/480p) H-Center adjustment

TOP PREVIOUS NEXT

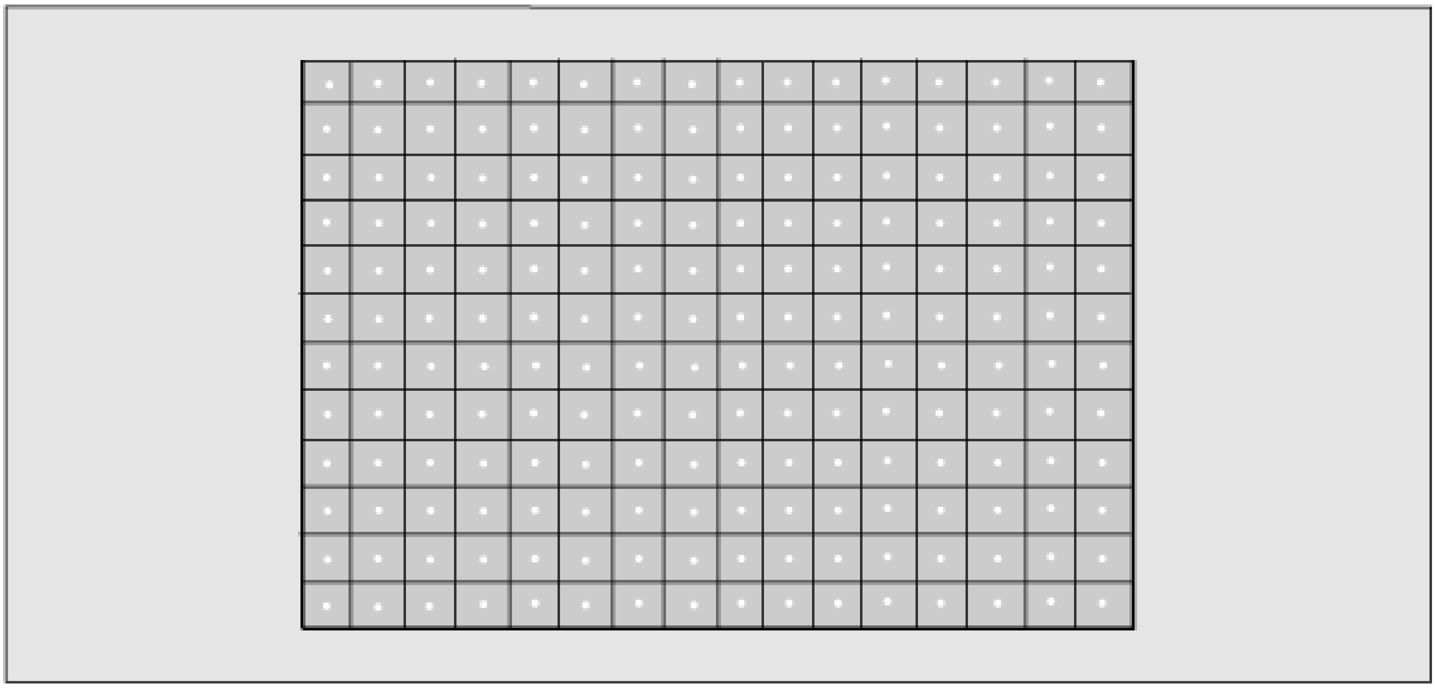
PREPARATION

1. Apply a crosshatch pattern.
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. If horizontal linearity is poor, in service mode, adjust data H LIN

H-Adjustment



2. Apply a pattern to center the picture.
3. If the horizontal center is not aligned, in service mode adjust H POS DATA to adjust the horizontal center of the monoscope pattern to the CRT center.

TOP PREVIOUS NEXT

15.9.2 (480i/480p)

Vertical linearity(V-C), V-Size and V-Position adjustment

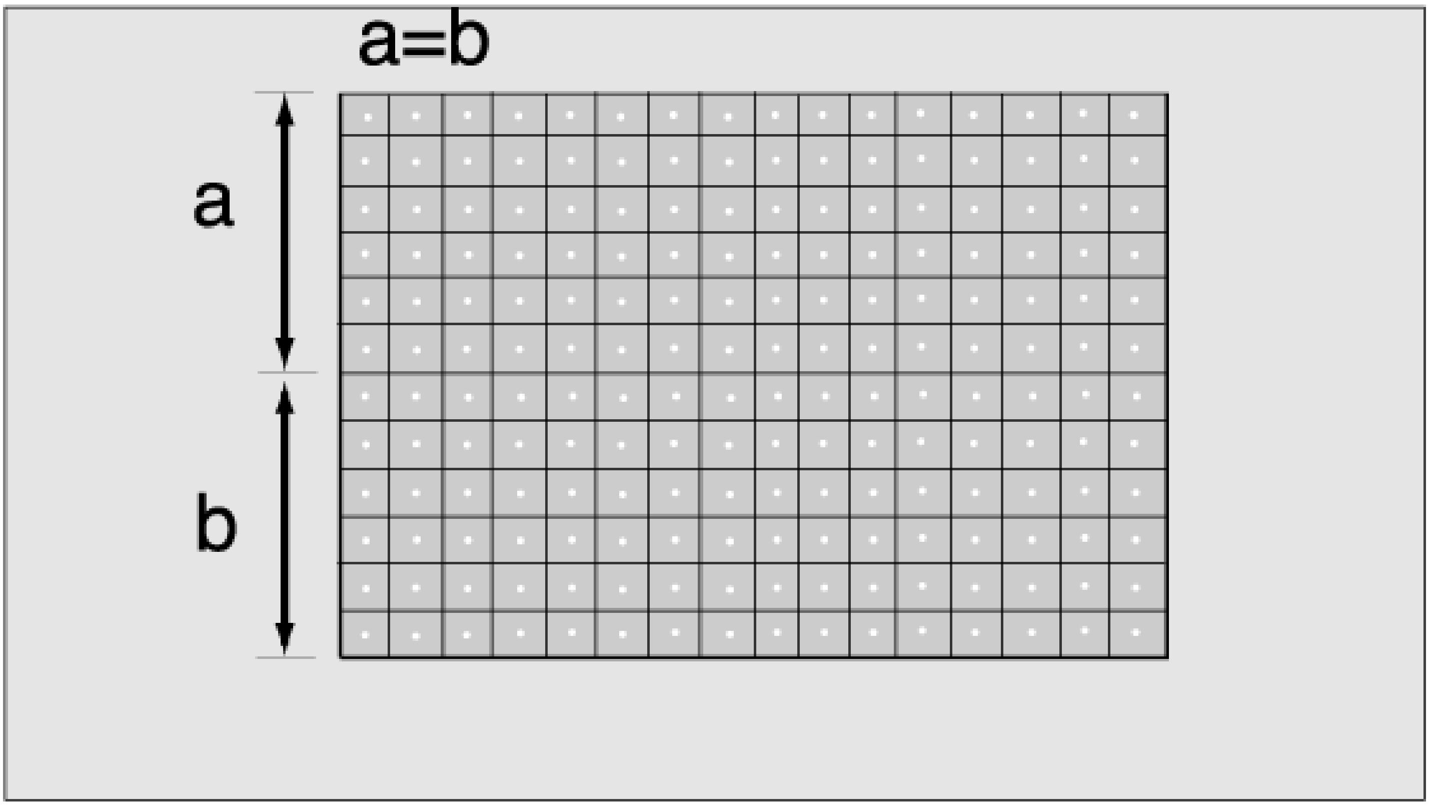
TOP PREVIOUS NEXT

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select DAC adjustment
   V-RAS and adjust crosshatch pattern to center vertical position to the CRT center.
2. Adjust linearity data V-C so that interval of a is same as b (a=b).



3. If the v-position is not at the CRT center, adjust
   V position V RAS DATA again.

4. Adjust H-TRAPEZOID data HTRAP so that the upper and lower lines becomes horizontal.

TOP PREVIOUS NEXT

15.9.3 (480i/480p)
V-S, V-Size adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

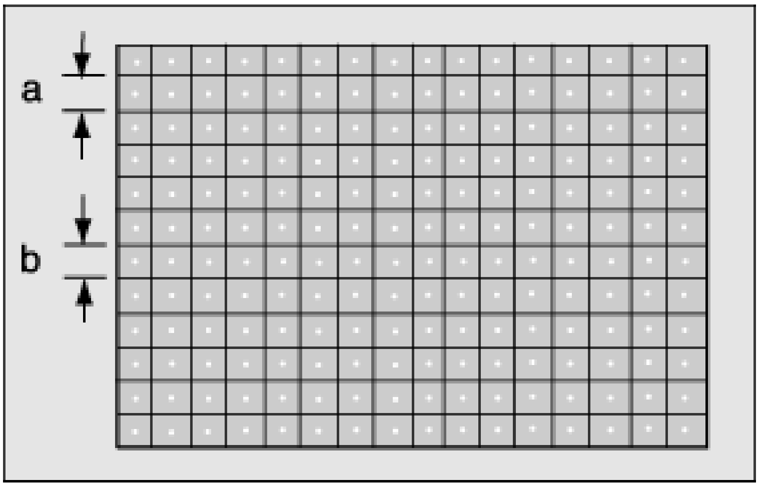
PROCEDURE

1. Enter to service mode
2. Check a and b sizes, If b-a < -1.5mm (in top & bottom extending case)
    - Increase V-S DATA by one step
    - Adjust VEAMP so that V-SIZE is regular size again.

    NOTE

    Repeat a and b until b-a ± 1.5mm
3. Confirm to make outermost circle of monoscope pattern a correct circle

V-Adjustment



TOP PREVIOUS NEXT

15.9.4 (480i/480p) Trapezoid adjustment

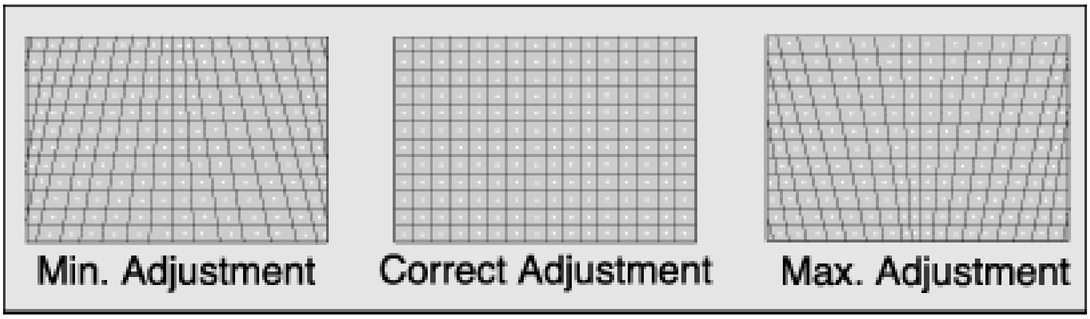
TOP PREVIOUS NEXT

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select TRAP and adjust DATA so that lines at right and left are vertical like a solid line


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.5 (480i/480p) Parallelogram adjustment

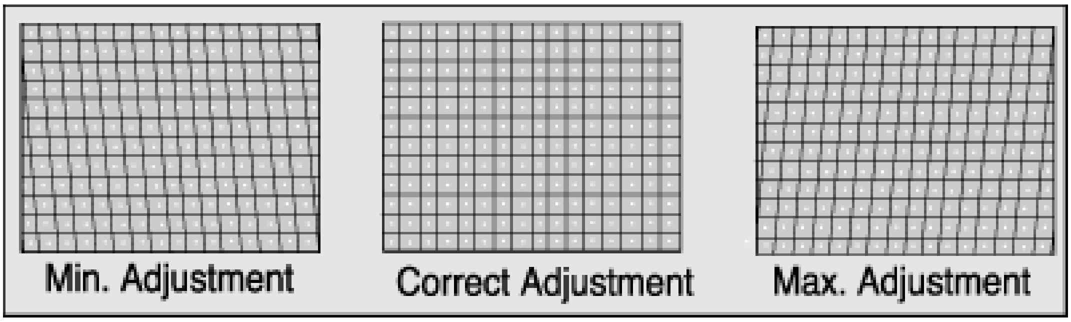
TOP PREVIOUS NEXT

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select PARA and adjust so that the lines at right and left are vertical like solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.6 (480i/480p) E-W PCC balance adjustment

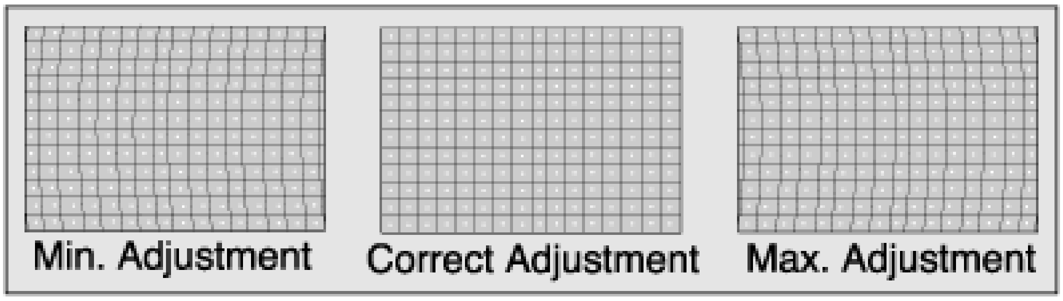
TOP PREVIOUS NEXT

PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select SIDE and adjust so that lines at right and left are vertical like solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.7 (480i/480p)
PCC adjustment

TOP PREVIOUS NEXT

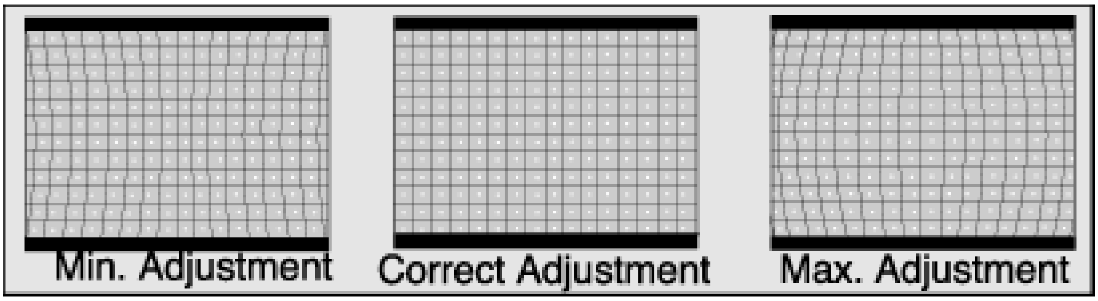
PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Confirm that trapezoid adjustment is done.
2. Adjust PCC DATA so that the 1st line and 3rd line make a good balance

PCC adjustments


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE

If side and lower side is imbalanced, adjust PCCHG and PCCLG so that PCC make good balance.

TOP PREVIOUS NEXT

15.9.8 (480i/480p) Corner PCC adjustment

TOP PREVIOUS NEXT

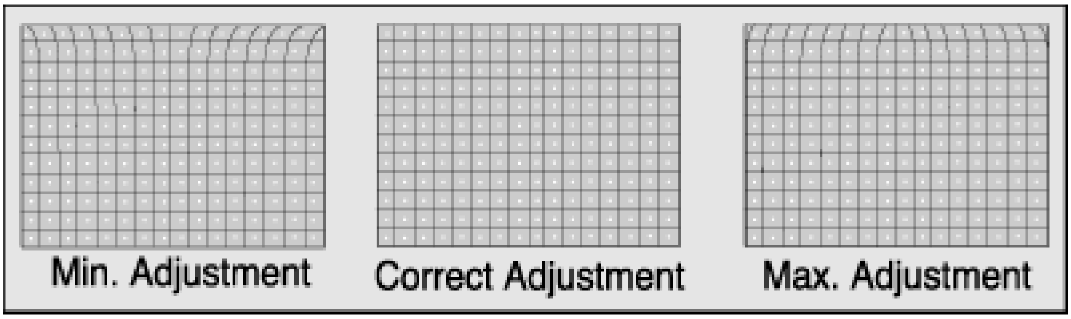
PREPARATION

1. Apply a crosshatch pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

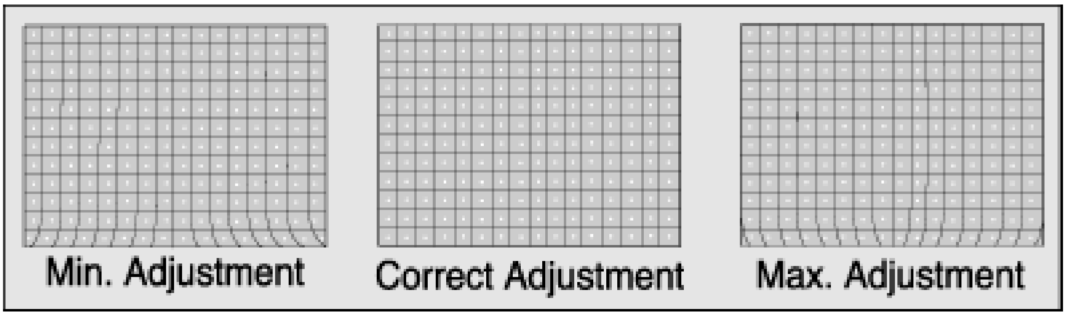
1. To adjust upper and lower linearity.
2. Adjust TOPG to straighten upper lines

Top adjustment


Min. Adjustment
Correct Adjustment
Max. Adjustment

3. Adjust BTMG to straighten lower lines

Bottom adjustment


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE

If TOP-BOTTOM bending point is not so good, adjust TOPSL and BTMSL of slice level.

TOP PREVIOUS NEXT

15.9.9 (480i/480p)
H-Size adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Use a pattern that permits centering the image
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Adjust H WID DATA so that left width and right become in good balance (not too wide or narrow).

TOP PREVIOUS NEXT

15.9.10 (480i/480p 16:9 and 480i/480p split) Vertical linearity(V-C) and V-Position adjustment

TOP PREVIOUS NEXT

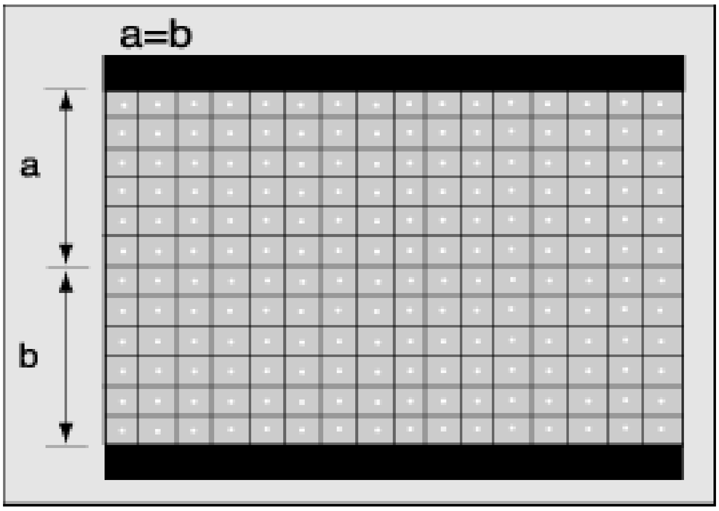
PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select DAC adjustment
   V-RAS and adjust crosshatch pattern to center vertical position to the CRT center.
2. Adjust linearity data V-C so that interval of a is same as b (a=b).

Linearity adjustment



TOP PREVIOUS NEXT

15.9.11 (480i/480p 16:9 and 480i/480p split) V-S, V-Size adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

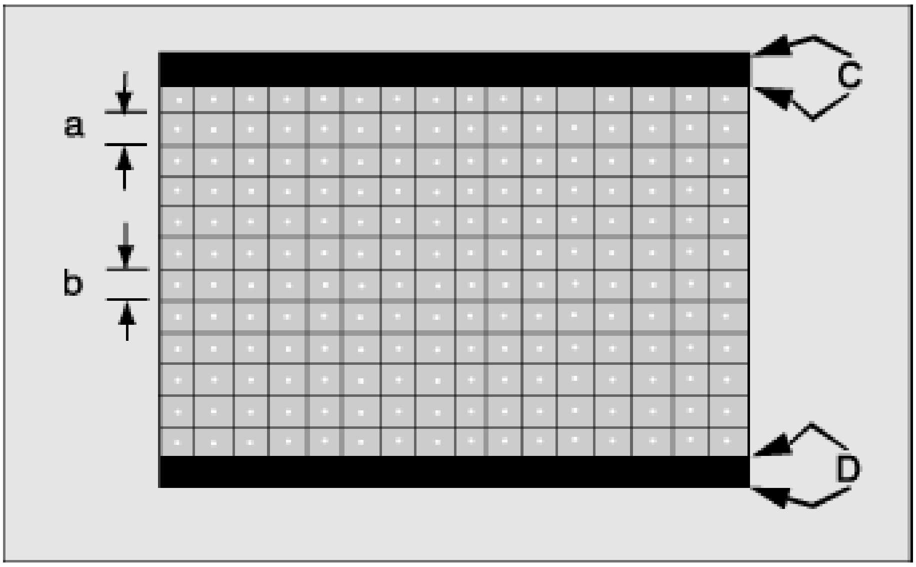
PROCEDURE

1. Enter to service mode
2. Adjust VAMP so that width C and D becomes 60mm
3. Check a and b sizes, If b-a < -1.5mm (in top and bottom extending case)
    - Increase V-S DATA by one step
    - Adjust VEAMP so that width C and D becomes 60mm for 32 and 70mm for 36 .

      NOTE

      Repeat until b-a ± 1.5mm

V-Adjustment



TOP PREVIOUS NEXT

15.9.12 (480i/480p 16:9 and 480i/480p split)
H-Trapezoid adjustment

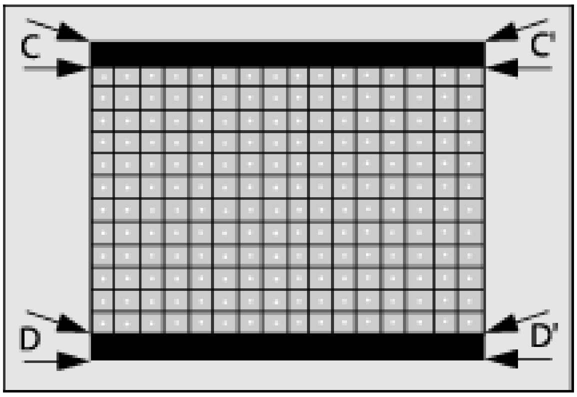
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select HTRAP and adjust DATA so that upper and lower edges become horizontal (c=c and d=d)



TOP PREVIOUS NEXT

15.9.13 (480i/480p 16:9 and 480i/480p split) Trapezoid adjustment

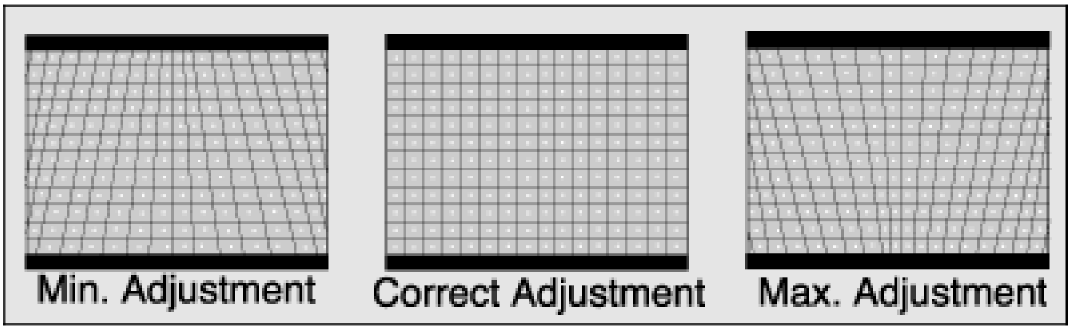
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select TRAP and adjust DATA so that lines at right and left are vertical like a solid line


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.14 (480i/480p 16:9 and 480i/480p split)
E-W PCC adjustment

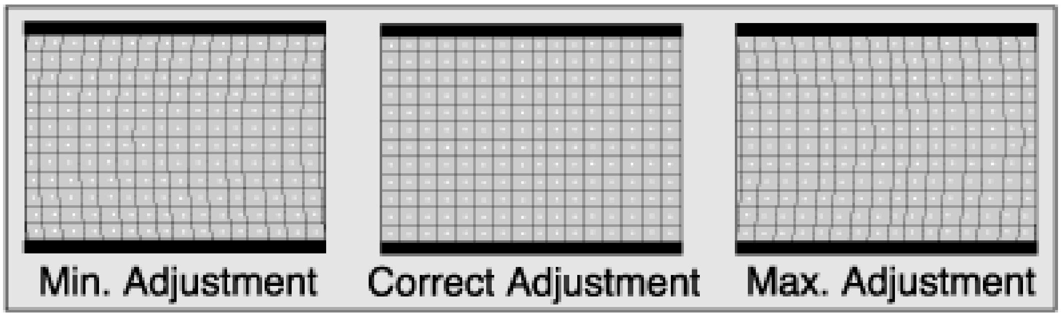
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select SIDE and adjust so that lines at right and left are vertical like solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.15 (480i/480p 16:9 and 480i/480p split) PCC adjustment

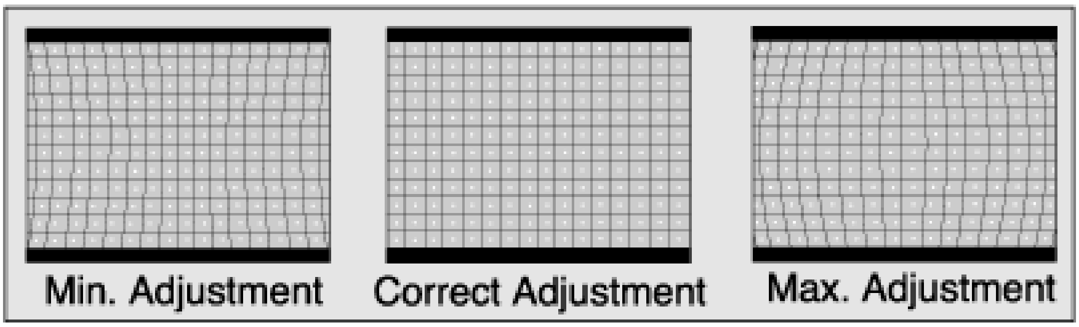
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Confirm that trapezoid adjustment is done.
2. Adjust PCC DATA so that the 1st line and 3rd line make a good balance


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE

If side and lower side is imbalanced, adjust PCCHG and PCCLG so that PCC make good balance.

TOP PREVIOUS NEXT

15.9.16 (480i/480p 16:9 and 480i/480p split) Corner PCC adjustment

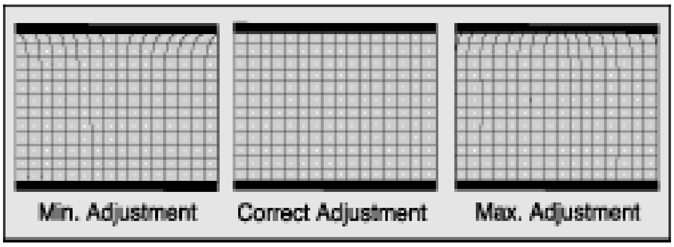
TOP PREVIOUS NEXT

PREPARATION

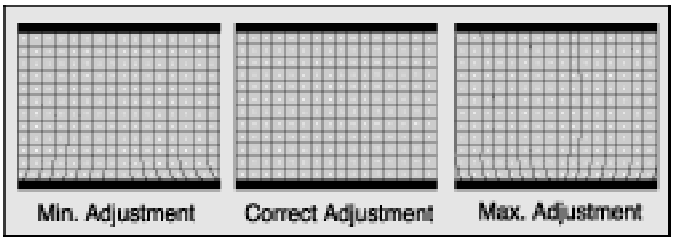
1. Apply a 480p pattern
2. Set mode to 16x9 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. To adjust upper and lower linearity.
2. Adjust TOPG to straighten upper lines


Min. Adjustment
Correct Adjustment
Max. Adjustment

3. Adjust BTMG to straighten lower lines


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE

If TOP-BOTTOM bending point is not so good, adjust TOPSL and BTMSL of slice level.

TOP PREVIOUS NEXT

15.9.17 1080i letter and split) H-Center adjustment

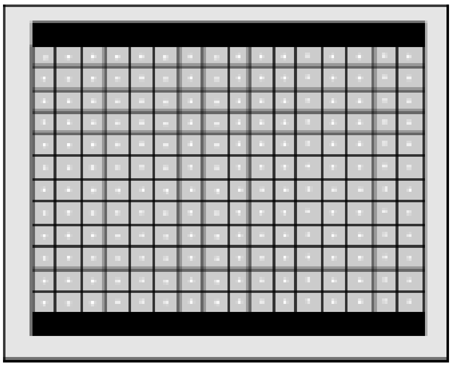
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern.
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. If horizontal linearity is poor, in service mode, adjust data H LIN



2. Apply a pattern to center the picture.
3. If the horizontal center is not aligned, in service mode adjust H POS DATA to adjust the horizontal center of the monoscope pattern to the CRT center.

TOP PREVIOUS NEXT

15.9.18 (1080i letter and split) Vertical linearity(V-C) and V-Position adjustment

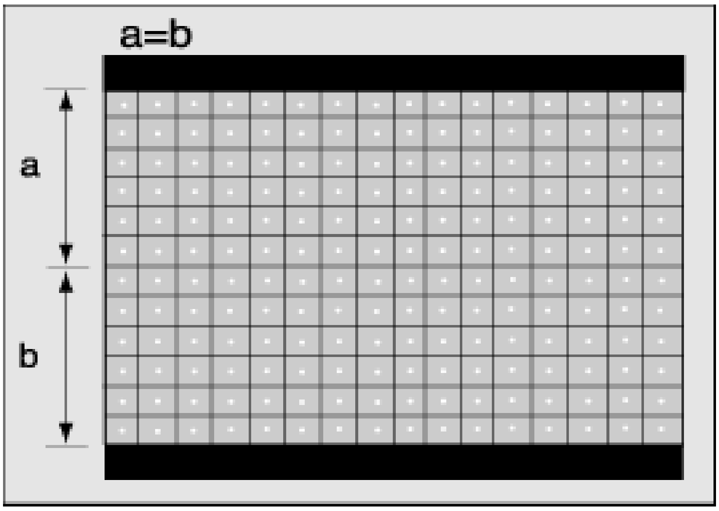
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern.
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select DAC adjustment
   V-RAS and adjust pattern to center vertical position to the CRT center.
2. Adjust linearity data V-C so that interval of a is same as b (a=b).



3. If the v-position is not at the CRT center, adjust again.

TOP PREVIOUS NEXT

15.9.19 (1080i letter and split) V-S, V-Size adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

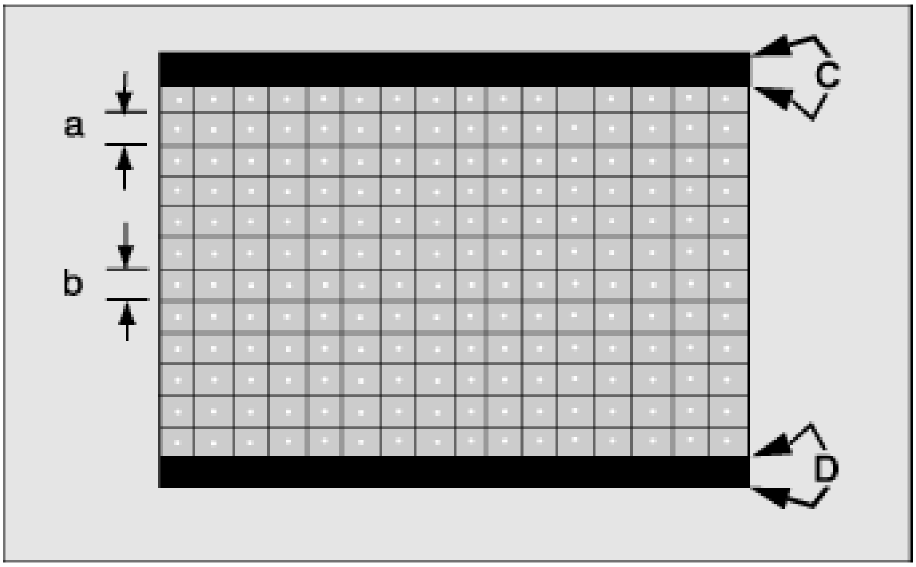
1. Enter to service mode
2. Adjust VAMP so that width C and D becomes 60mm
3. Check a and b sizes, If b-a < -1.5mm (in top and bottom extending case)
    - Increase V-S DATA by one step
    - Adjust VEAMP so that width C and D becomes 60mm.

      NOTE

      Repeat until b-a ± 1.5mm
4. Check a and b sizes, If b-a > -1.5mm (in top and bottom extending case)
    - Decrease V-S DATA by one step
    - Adjust VEAMP so that width C and D becomes 60mm.

      NOTE

      Repeat until b-a ± 1.5mm



TOP PREVIOUS NEXT

15.9.20 (1080i letter and split) Trapezoid adjustment

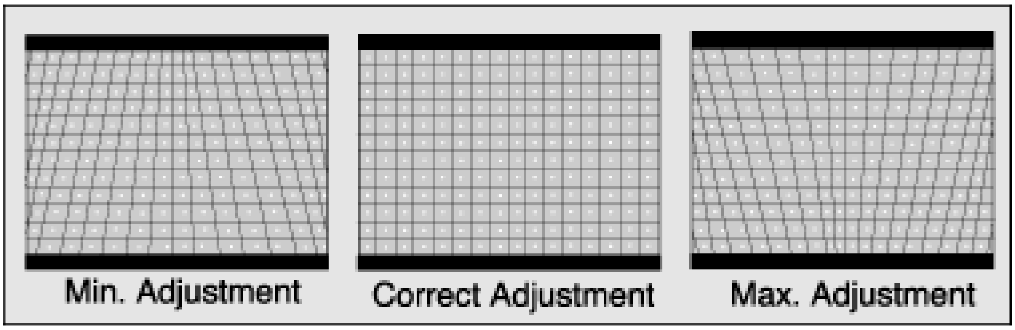
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select TRAP and adjust DATA so that lines at right and left are vertical like a solid line


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.21 (1080i letter and split) Parallelogram adjustment

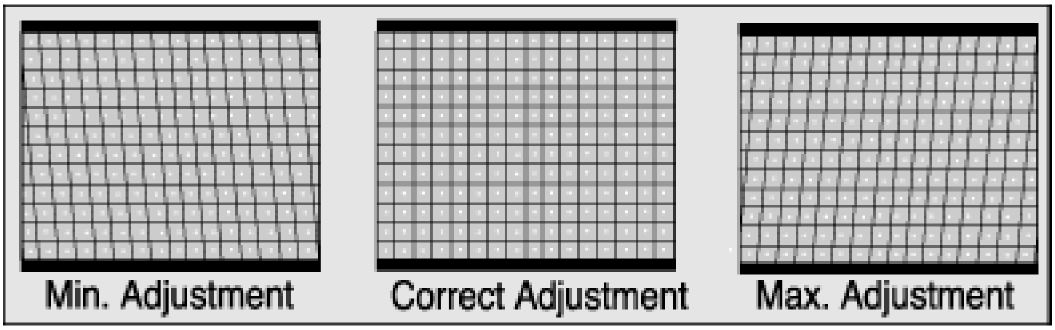
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select PARA and adjust so that the lines at right and left are vertical like solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.22 (1080i letter and split) PCC adjustment

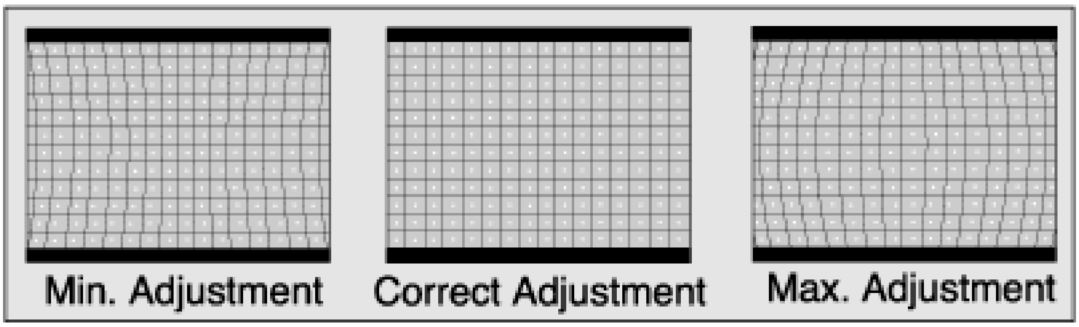
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Confirm that trapezoid adjustment is done.
2. Adjust PCC DATA so that the 1st line and 3rd line make a good balance


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE:

If upper and lower side is unbalaced, adjust PCCHG and PCCLG so that PCC make good balance.

TOP PREVIOUS NEXT

15.9.23 (1080i letter and split) Corner PCC adjustment

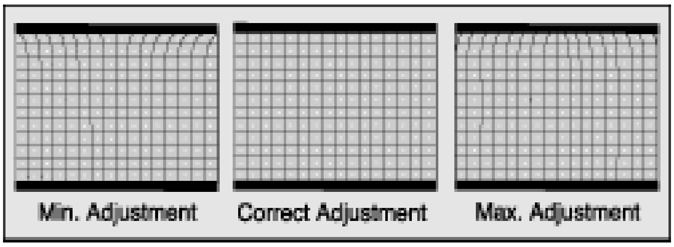
TOP PREVIOUS NEXT

PREPARATION

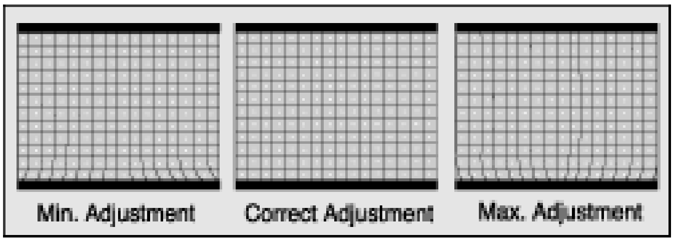
1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. To adjust upper and lower linearity.
2. Adjust TOPG to straighten upper lines


Min. Adjustment
Correct Adjustment
Max. Adjustment

3. Adjust BTMG to straighten lower lines


Min. Adjustment
Correct Adjustment
Max. Adjustment

NOTE

If TOP-BOTTOM bending point is not so good, adjust TOPSL and BTMSL of slice level.

TOP PREVIOUS NEXT

15.9.24 (1080i letter and split) E-W PCC adjustment

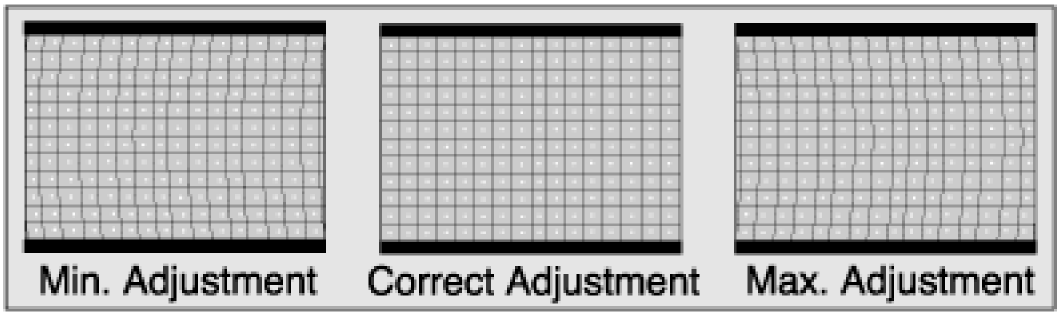
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Normalize the picture settings.
3. Set picture mode to VIVID

PROCEDURE

1. Confirm that trapezoid adjustment is done.
2. Adjust SIDE DATA so that the lines at left and right become vertical


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.25 (1080i letter and split) H-Width adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Use a pattern that permits centering the image
2. Apply a 1080i pattern
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Adjust H WID DATA so that left width and right become in good balance (not too wide or narrow).

TOP PREVIOUS NEXT

15.9.26 (1080i full) H-Size, V-SIZE adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Use a pattern that permits centering the image
2. Apply a 1080i pattern
3. Set mode to 4x3 in set-up menu
4. Normalize the picture settings.
5. Set picture mode to VIVID

PROCEDURE

1. Adjust H WID and HPOS DATA so that left width and right become in good balance (not too wide or narrow and centered).
2. Adjust VEAMP and VRAS DATA so that upper h and lower become in good balance (not too wide or narrow and centered)

TOP PREVIOUS NEXT

15.9.27 (1080i full) Vertical linearity(V-C) and V-Position adjustment

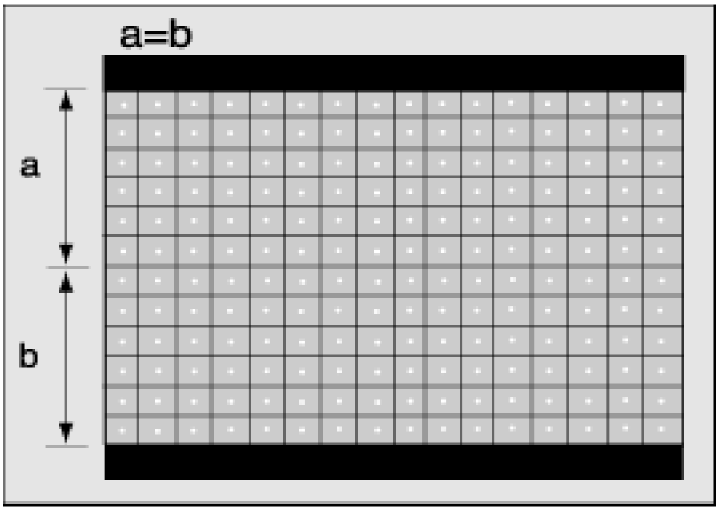
TOP PREVIOUS NEXT

PREPARATION

1. Use a pattern that permits centering the image
2. Apply a 1080i pattern
3. Set mode to 4x3 in set-up menu
4. Normalize the picture settings.
5. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select DAC adjustment
   VRAS and adjust pattern to center vertical position to the CRT center.
2. Adjust linearity data V-C so that interval of a is same as b (a=b).



3. If the v-position is not at the CRT center, adjust again.

TOP PREVIOUS NEXT

15.9.28 (1080i full)
V-S, V-Size adjustment

TOP PREVIOUS NEXT

PREPARATION

1. Use a pattern that permits centering the image
2. Apply a 1080i pattern
3. Set mode to 4x3 in set-up menu
4. Normalize the picture settings.
5. Set picture mode to VIVID

PROCEDURE

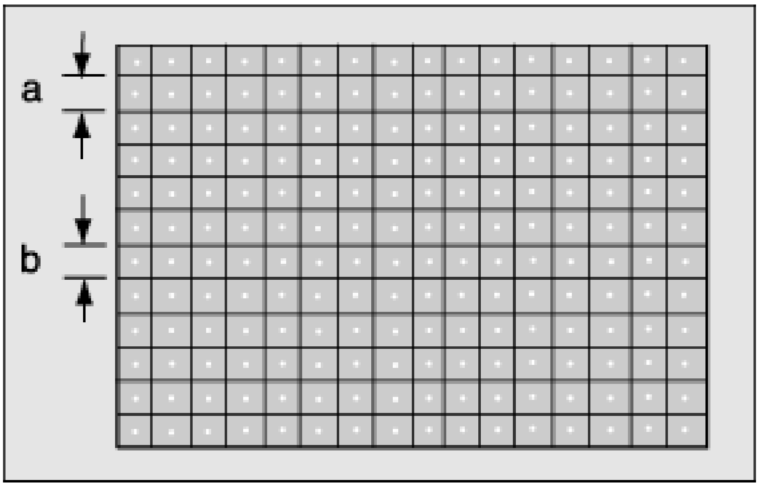
1. Enter to service mode
2. Adjust VAMP to correct vertical size.
3. Check a and b sizes, If b-a < -1.5mm (in top and bottom extending case)
   - Increase V-S DATA by one step
   - Adjust VEAMP to correct vertical size.

     NOTE

     Repeat until b-a ± 1.5mm
4. Check a and b sizes, If b-a > -1.5mm (in top & bottom shortening case)
   - Decrease V-S by one step.
   - Adjust VEAMP to correct vertical size

     NOTE

Repeat until b-a ± 1.5mm



TOP PREVIOUS NEXT

15.9.29 (1080i full) Trapezoid adjustment

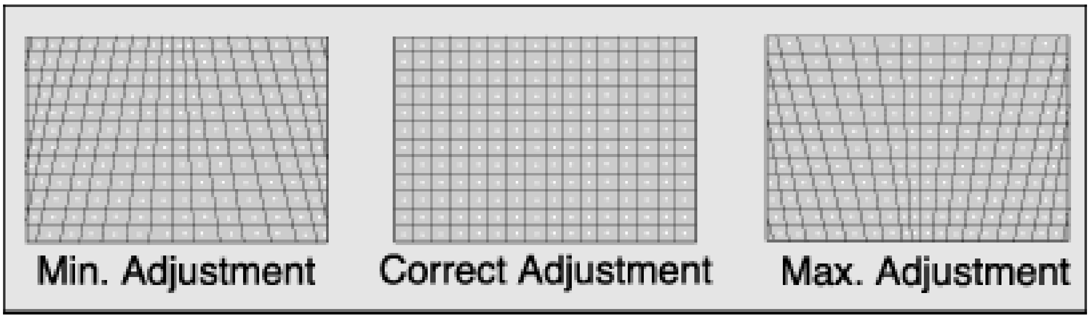
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Set mode to 4x3 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select TRAP and adjust DATA so that lines at right and left are vertical like a solid line


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.30 (1080i full) Parallelogram adjustment

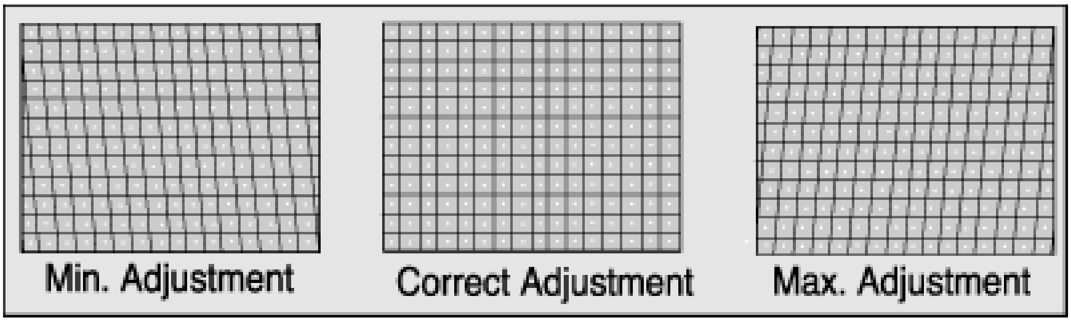
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Set mode to 4x3 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Enter service mode, select PARA and adjust so that the lines at right and left are vertical like solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.31 (1080i full) E-W PCC adjustment

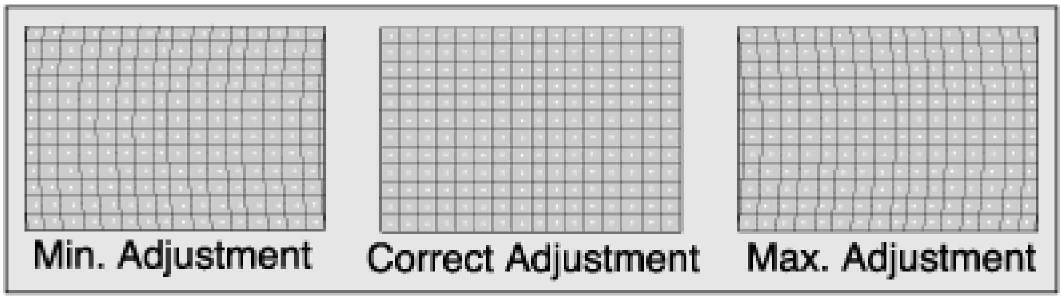
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Set mode to 4x3 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

1. Confirm that trapezoid adjustment is done.
2. Adjust SIDE DATA so that the lines at left and right become vertical


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.9.32 (1080i full) Corner PCC adjustment

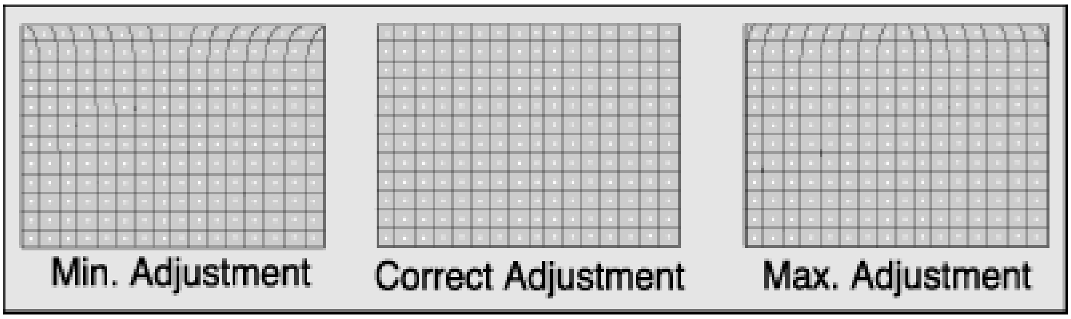
TOP PREVIOUS NEXT

PREPARATION

1. Apply a 1080i pattern
2. Set mode to 4x3 in set-up menu
3. Normalize the picture settings.
4. Set picture mode to VIVID

PROCEDURE

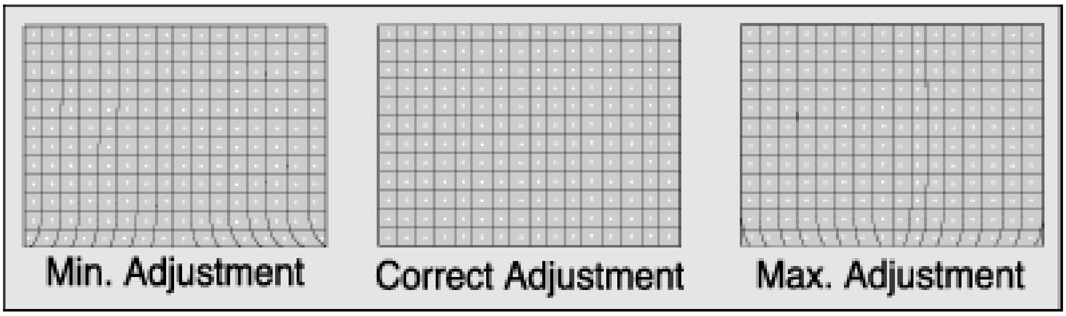
1. To adjust upper and lower linearity.
2. Adjust TOPG to straighten upper lines


Min. Adjustment
Correct Adjustment
Max. Adjustment

3. Adjust BTMG to straighten lower lines

NOTE

If TOP-BOTTOM bending point is not so good, adjust TOPSL and BTMSL of slice level.


Min. Adjustment
Correct Adjustment
Max. Adjustment

TOP PREVIOUS NEXT

15.10 MTS circuit adjustmens

TOP PREVIOUS NEXT

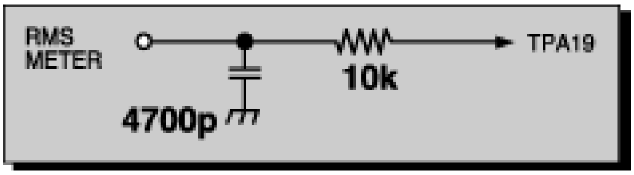
The MTS circuit adjustments require two steps:

1. Input level adjustment.
2. Stereo separation adjustment.

Input level adjustment
Service DAC adjustment (MTSIN)

PREPARATION

1. Connect an RMS meter with filter jig as shown in figure to TPA19 (L_OUT)



2. Connect an RF signal generator to the RF antenna input.

PROCEDURE

1. Apply the following signal from the RF signal generator:
    - Video: 100 IRE flat field, 30% modulation.
    - Audio: 300Hz, 100% modulation, monaural (70 ±5dB, 75Ω OPEN, P/S 10dB). Make sure that the 75µs pre-emphasis is OFF.
2. Adjust the MTS input level adjustment MTSIN data until the RMS voltage measured is 106 ± 6.0mVrms.

Stereo separation adjustment (SEPAH)

PREPARATION

1. Connect an R.F. signal generator to the RF antenna input.
2. Connect a scope to TPA20.

PROCEDURE

1. Select stereo mode in audio menu
2. Apply the following signal from the RF signal generator:
    - Video: 100 IRE flat field, 30% modulation.
    - Audio: 300Hz, 30% modulation, stereo (left only) (70±5dB, 75Ω OPEN, P/S 10dB).

      NOTE

      After setting 30% modulation with P.L. SW and N.R. SW OFF, turn P.L. SW and N.R. SW ON.
3. In service mode, adjust the MTS Low-Level separation adjustment SEPAL data until the amplitude displayed on the scope is minimum.
4. Apply the following signal from the RF signal generator:
    - Video: 100 IRE flat field, 30% modulation
    - Audio: 3KHz, 30% modulation, stereo (left only) (70 ±5dB, 75Ω OPEN, P/S 10dB).

      NOTE

      After setting 30% modulation with P.L. SW and N.R. SW OFF, turn P.L. SW and N.R. SW ON.
5. Adjust the MTS High-level separation adjustment SEPAH until the amplitude displayed on the scope is minimum.
6. Repeat above steps 2 through 5 until the amplitude is at minimum for both signals.

TOP PREVIOUS NEXT

15.11 Clock adjustment (CLOCK)

TOP PREVIOUS NEXT

PREPARATION

Connect the frequency counter from TP96
(A13 pin 14) to cold ground

PROCEDURE

1. Turn the receiver OFF with the A.C. power applied.
2. Measure TP96 (A13 pin 14) for the frequency of the waveform and record the reading.

   NOTE

3. TP96 (A13 pin 14) measurement must have at least four digits of resolution following the decimal point. Example: 000.0000
4. Place the receiver into service mode for making electronic adjustment, select the clock adjustment DAC CLOCK .
5. Calculate and set CLOCK based on the following formula:

$$\boxed{CLOCK = 128 + (0.450)\times 10^{6}\frac{\{(732.4220) - TP96[\text{Hz}]\}}{(732.4220)}}$$

   NOTE

   TP96 (A23 pin 21) measurement will not change regardless of the value stored in CLOCK.

TOP PREVIOUS NEXT

15.12 Service Adjustments Mechanical Controls

TOP PREVIOUS NEXT

WIDTH CORRECTION ADJUSTMENT

Note

Perform this adjustment only when FBT is changed.

Preparation

Connect the DVM (digital voltage meter) (+) lead to connector D10 pin-2 or TPQ27; and (-) lead to connector D10 pin-4.

Procedure

1. Apply a black pattern.
2. Adjust R524 on D-Board so that the voltage on connector D10 pin-2 or TPQ27 is 1.8±0.1V on D-Board.

FOCUS (PART OF T551)

Preparation

Apply a crosshatch pattern with dots.

Procedure

1. Adjust the FOCUS control to obtain the sharpest and clearest dot pattern.
    - F1 focus control adjusts vertically.
    - F2 focus control adjusts horizontally.
    - Use this two controls to adjust focus, until best overall picture is obtained.

TOP PREVIOUS NEXT

16 Identification of components

TOP PREVIOUS NEXT

16.1 TV with back cover removed

16.2 A-Board

16.3 D-Board

16.4 L-Board

16.5 DG-Board top

16.6 G-Board bottom

16.7 DF-Board

16.8 K-Board

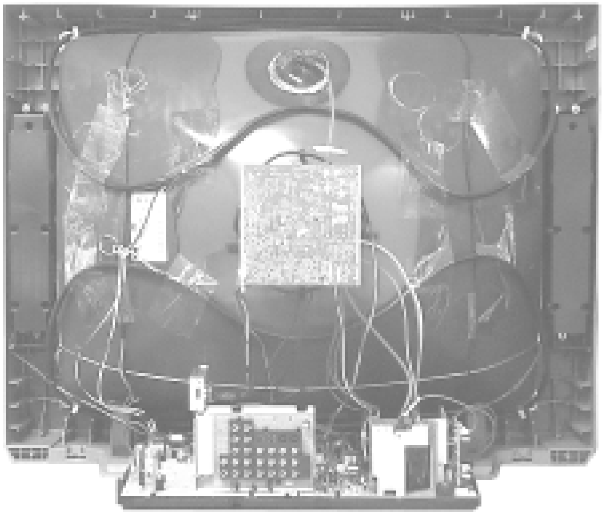
16.9 H-Board

TOP PREVIOUS NEXT

16.1 TV with back cover removed

TOP PREVIOUS NEXT

TV View with back cover removed

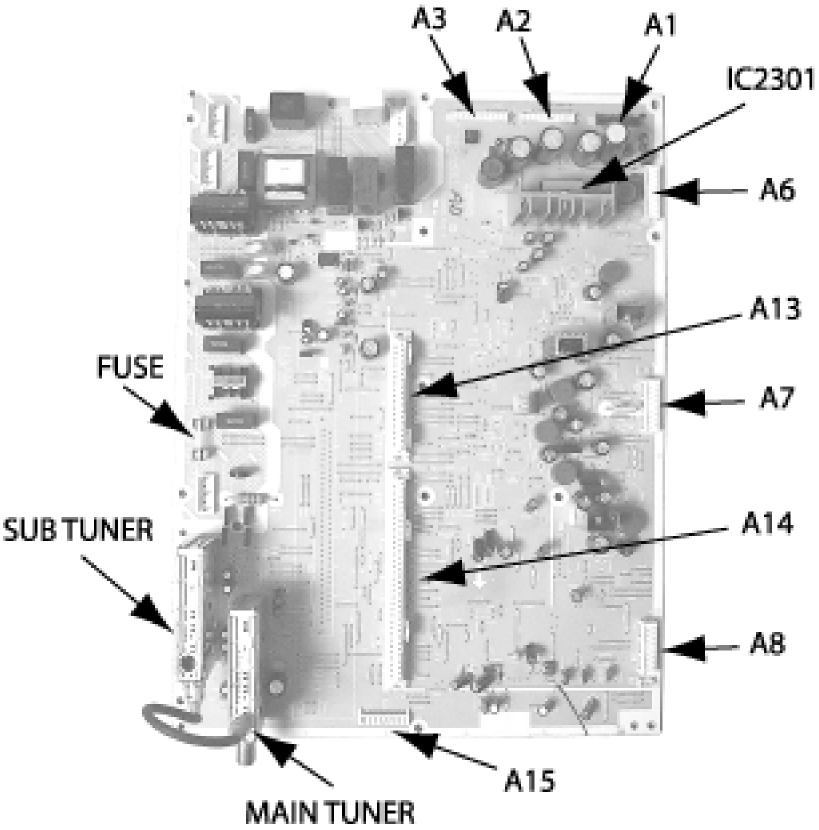


TOP PREVIOUS NEXT

16.2 A-Board

TOP PREVIOUS NEXT

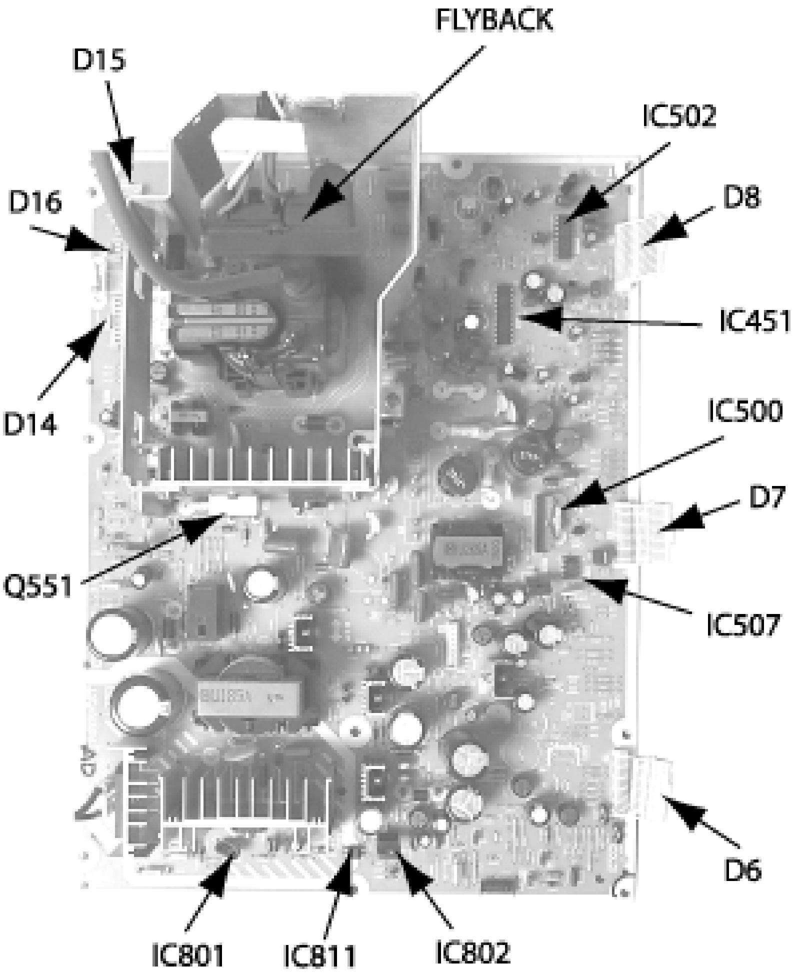
A-Board view


A3
A2
A1
IC2301
A6
A13
A7
FUSE
SUB TUNER
A14
A8
A15
MAIN TUNER

TOP PREVIOUS NEXT

16.3 D-Board

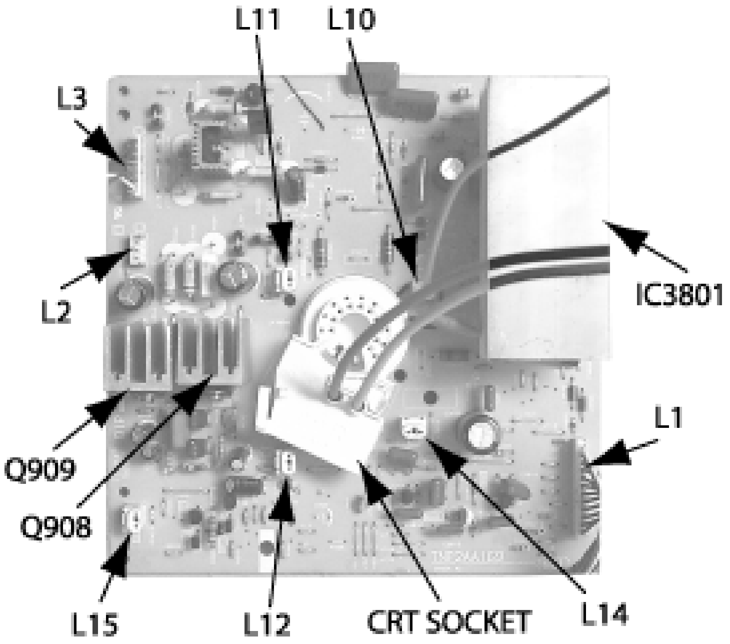
D-Board view


FLYBACK
D15
IC502
D16
D8
IC451
D14
IC500
D7
Q551
IC507
D6
IC801
IC811
IC802

16.4 L-Board

TOP PREVIOUS NEXT

L-Board view

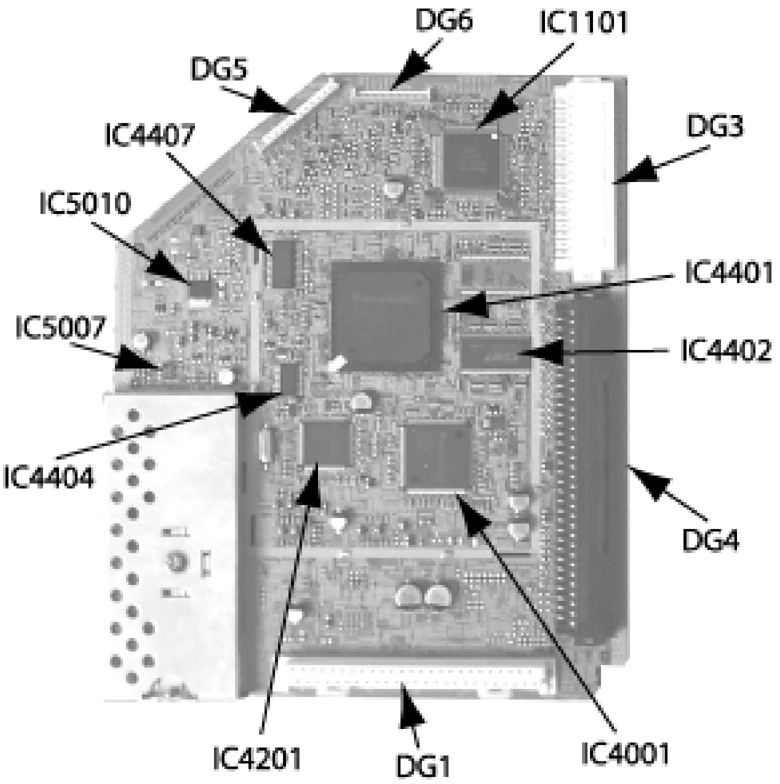

L11
L10
L3
IC3801
L2
L1
Q909
Q908
L15
L12
CRT SOCKET
L14

TOP PREVIOUS NEXT

16.5 DG-Board top

TOP PREVIOUS NEXT

DG-Board top view


DG6
IC1101
DG5
DG3
IC4407
IC5010
IC4401
IC4402
IC5007
IC4404
DG4
IC4201
DG1
IC4001

NOTE:

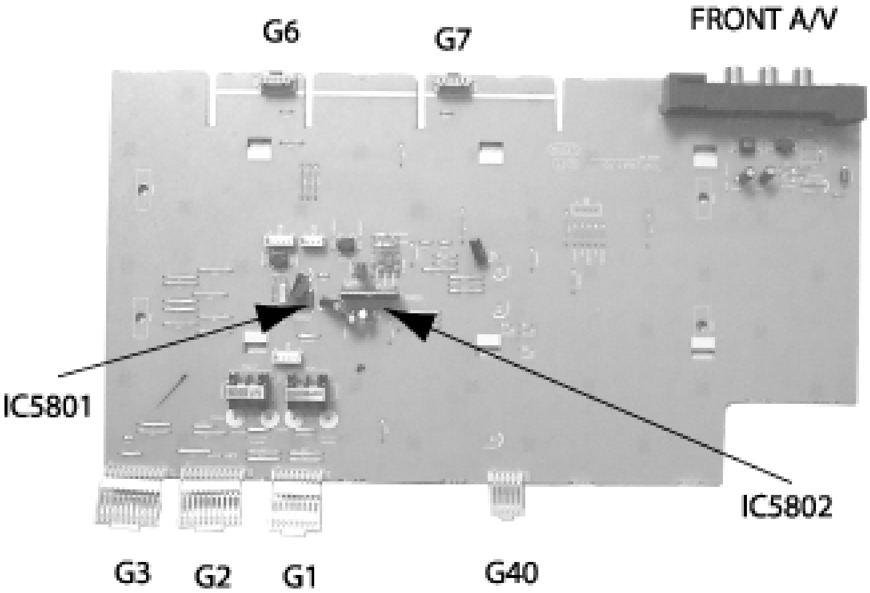
Please ADD 4 to all IC part numbers, EXAMPLE: On board is IC506, then by adding 4 is IC4506

TOP PREVIOUS NEXT

16.6 G-Board bottom

TOP PREVIOUS NEXT

G-Board

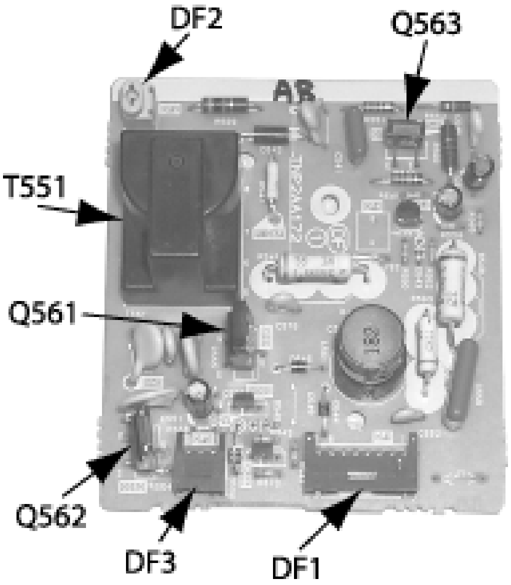

G6
G7
FRONT A/V
IC5801
IC5802
G3
G2
G1
G40

TOP PREVIOUS NEXT

16.7 DF-Board

TOP PREVIOUS NEXT

DF-Board view

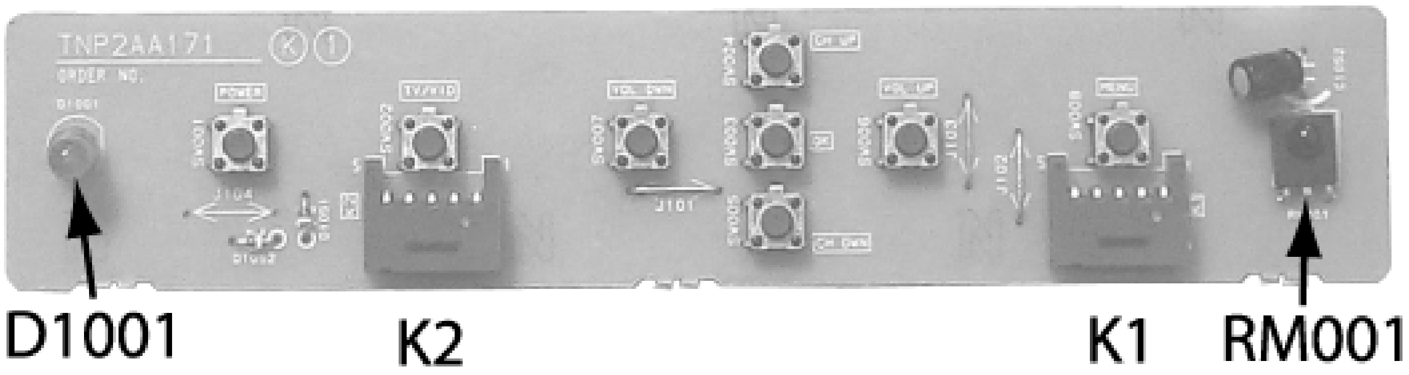

DF2
Q563
T551
Q561
Q562
DF3
DF1

TOP PREVIOUS NEXT

16.8 K-Board

TOP PREVIOUS NEXT

K-Board view

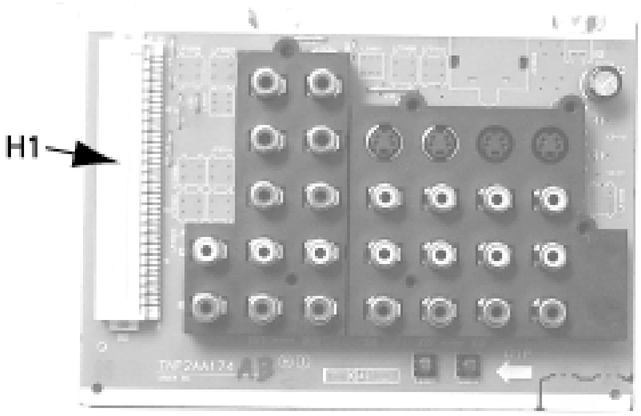

TNP2AA171
ORDER NO.
POWER
TV/VID
VOL DWN
CH UP
OK
VOL UP
MENU
CH DWN
J101
J104
D1001
K2
K1
RM001

TOP PREVIOUS NEXT

16.9 H-Board

TOP PREVIOUS NEXT

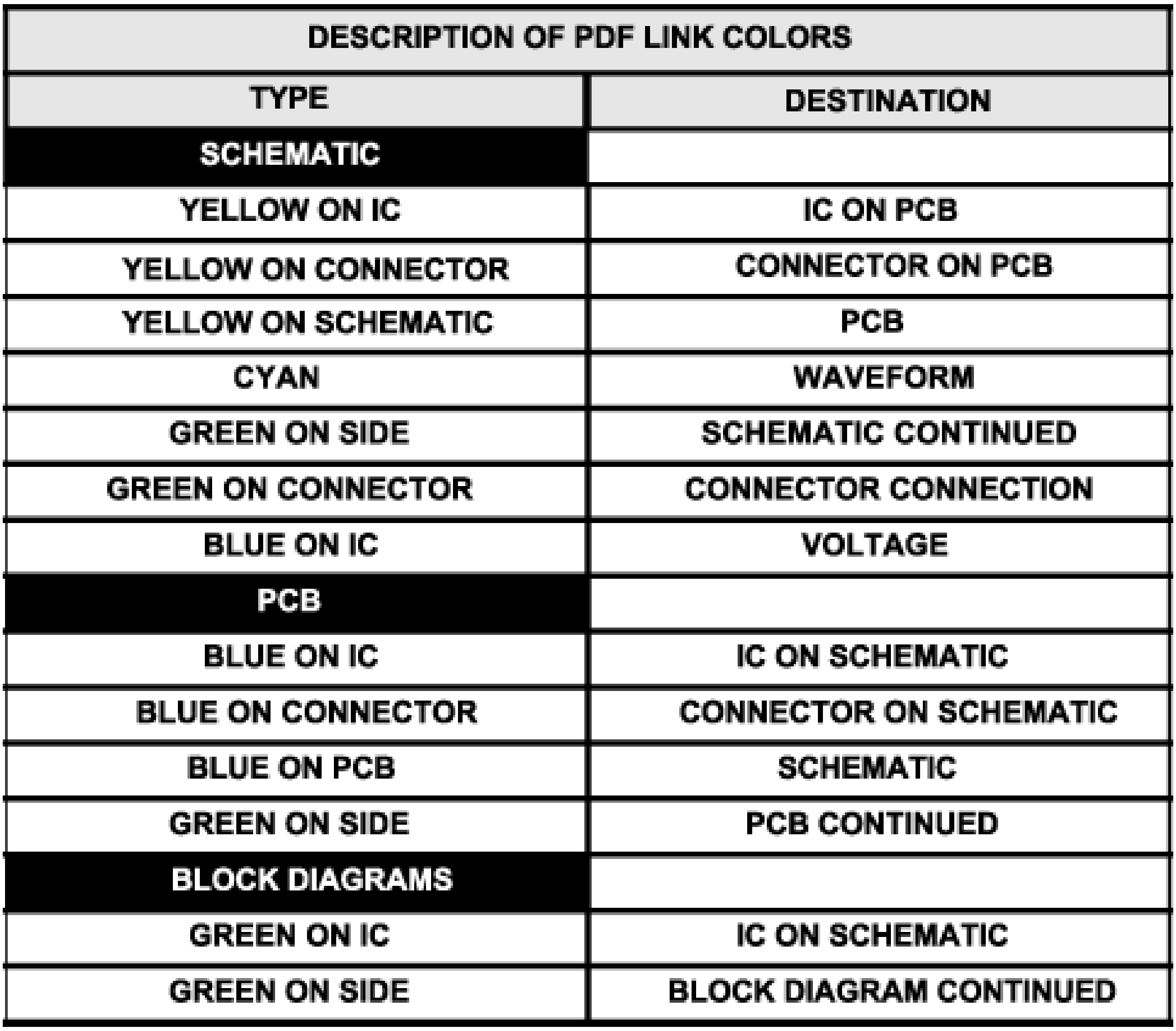
H-Board view



TOP PREVIOUS NEXT

17 Reference of PDF links color

TOP PREVIOUS NEXT



DESCRIPTION OF PDF LINK COLORS	
TYPE	**DESTINATION**
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

TOP PREVIOUS NEXT

18 Conductor Views

TOP PREVIOUS NEXT

18.1 A-Board 1 of 2

18.2 A-Board 2 of 2

18.3 D-Board 1 of 2

18.4 D-Board 2 of 2

18.5 H-Board

18.6 DF-Board

18.7 G-Board 1 of 2

18.8 G-Board 2 of 2

18.9 L-Board

18.10 K-Board

TOP PREVIOUS NEXT

18.1 A-Board 1 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.2 A-Board 2 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.3 D-Board 1 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.4 D-Board 2 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.5 H-Board

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.6 DF-Board

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.7 G-Board 1 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.8 G-Board 2 of 2

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.9 L-Board

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

18.10 K-Board

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

19 Block Diagrams

TOP PREVIOUS NEXT

19.1 Audio Block Diagram

19.2 Video Block Diagram

TOP PREVIOUS NEXT

19.1 Audio Block Diagram

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

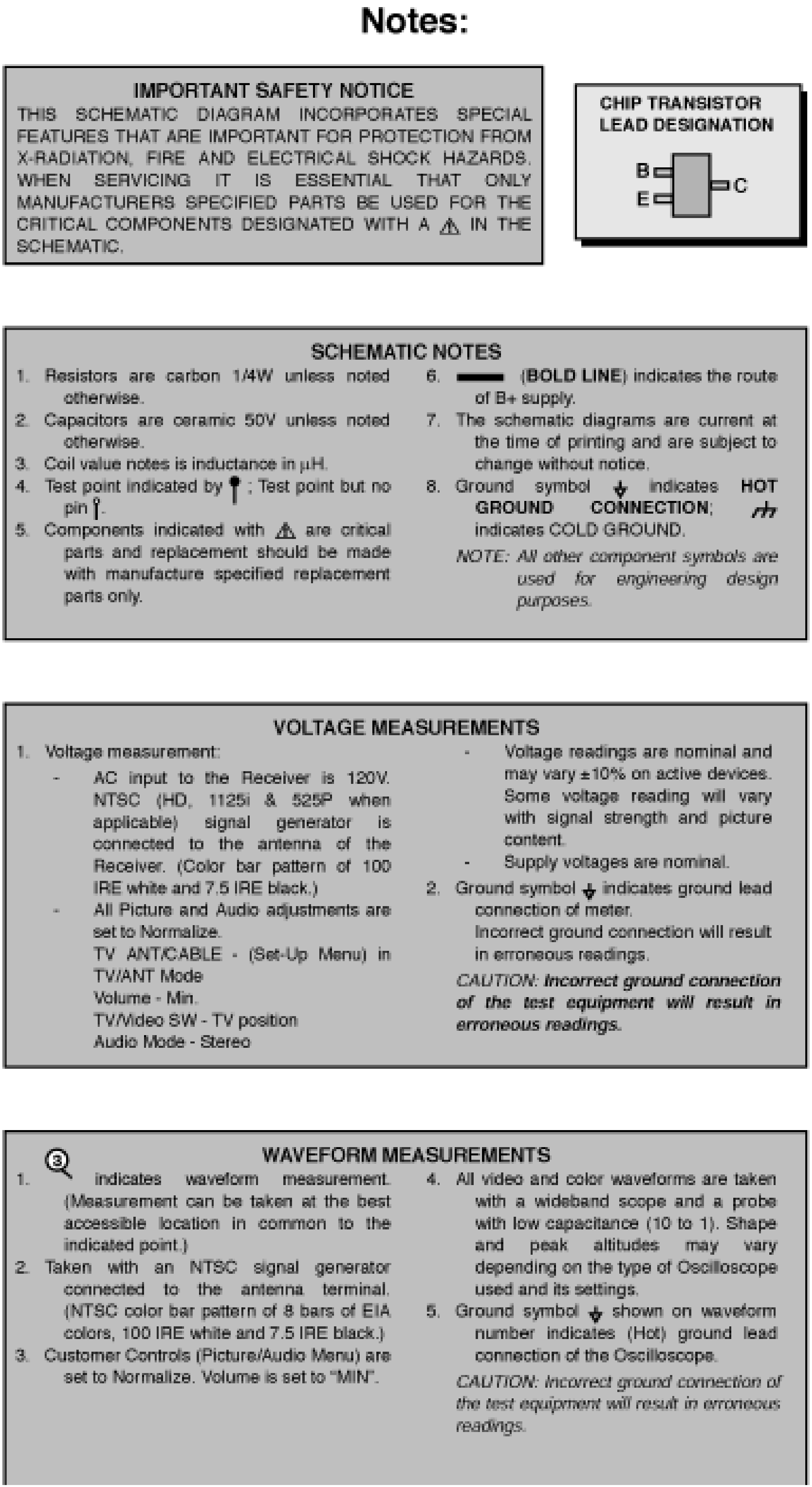
19.2 Video Block Diagram

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

20.1 Schematic notes in english

TOP PREVIOUS NEXT



Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION

SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ⫯ ; Test point but no pin ⫰.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⏛ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices. Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

WAVEFORM MEASUREMENTS

1. 🔍 indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

TOP PREVIOUS NEXT

20 Schematic Diagrams

TOP PREVIOUS NEXT

20.1 Schematic notes in english

20.2 Schematic notes in spanish

20.3 A-Board schematic 1 of 4

20.4 A-Board schematic 2 of 4

20.5 A-Board schematic 3 of 4

20.6 A-Board schematic 4 of 4

20.7 D-Board schematic 1 of 5

20.8 D-Board schematic 2 of 5

20.9 D-Board schematic 3 of 5

20.10 D-Board schematic 4 of 5

20.11 D-Board schematic 5 of 5

20.12 DG-Board schematic 1 of 11

20.13 DG-Board schematic 2 of 11

20.14 DG-Board schematic 3 of 11

20.15 DG-Board schematic 4 of 11

20.16 DG-Board schematic 5 of 11

20.17 DG-Board schematic 6 of 11

20.18 DG-Board schematic 7 of 11

20.19 DG-Board schematic 8 of 11

20.20 DG-Board schematic 9 of 11

20.21 DG-Board schematic 10 of 11

20.22 DG-Board schematic 11 of 11

20.23 DF-Board schematic 1 of 2

20.24 L-Board schematic 1 of 2

20.25 L-Board schematic 2 of 2

20.26 G-Board schematic 1 of 2

20.27 G-Board schematic 2 of 2

20.28 H-Board schematic

20.29 K-Board schematic

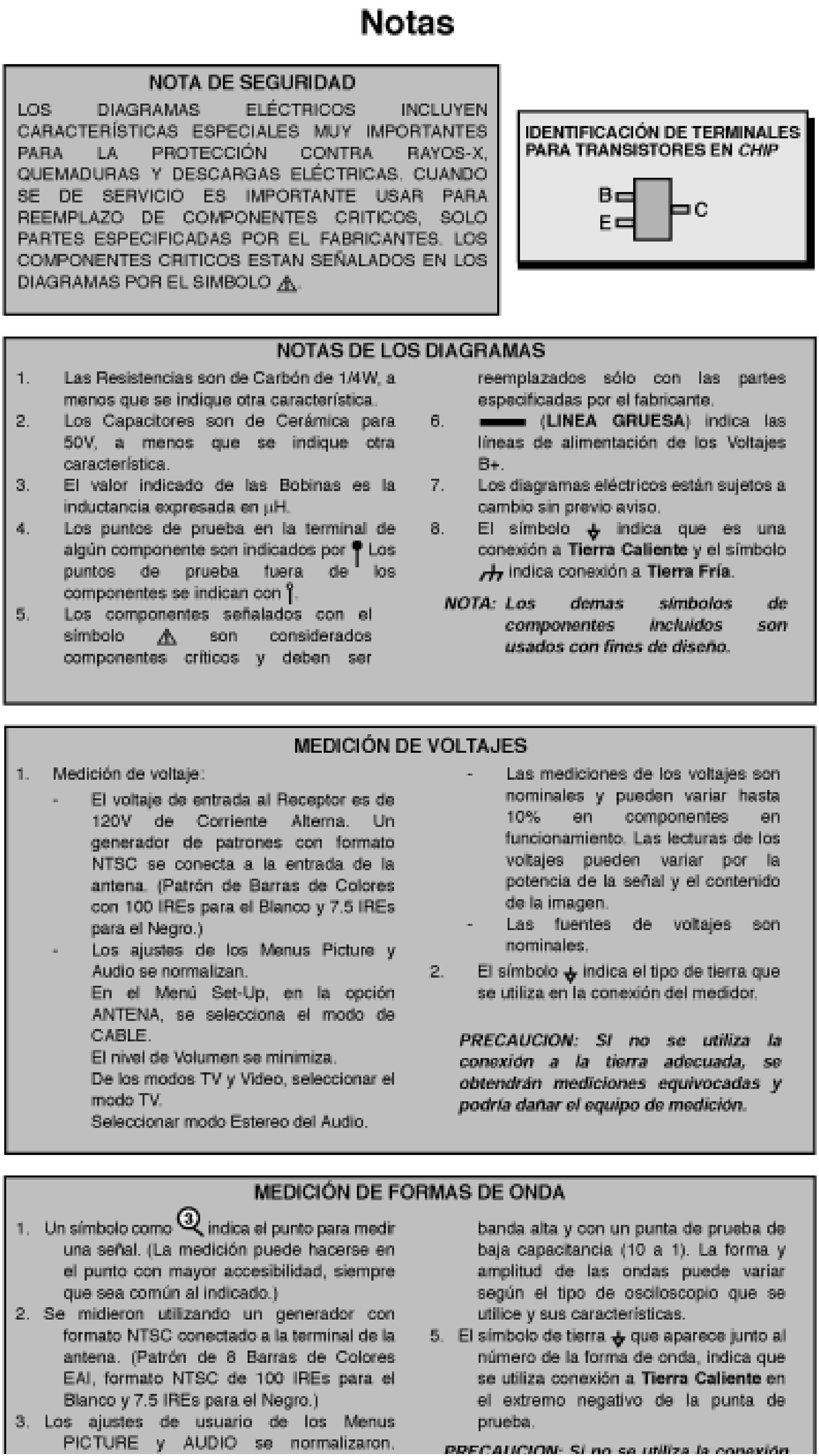
20.30 Voltages

20.31 Waveforms

TOP PREVIOUS NEXT

20.2 Schematic notes in spanish

TOP PREVIOUS NEXT



Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*

NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en µH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ● Los puntos de prueba fuera de los componentes se indican con ○.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬▬ (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⏛ indica conexión a **Tierra Fría**.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
   - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
   - Los ajustes de los Menus Picture y Audio se normalizan.
     En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
     El nivel de Volumen se minimiza.
     De los modos TV y Video, seleccionar el modo TV.
     Seleccionar modo Estereo del Audio.
   - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
   - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

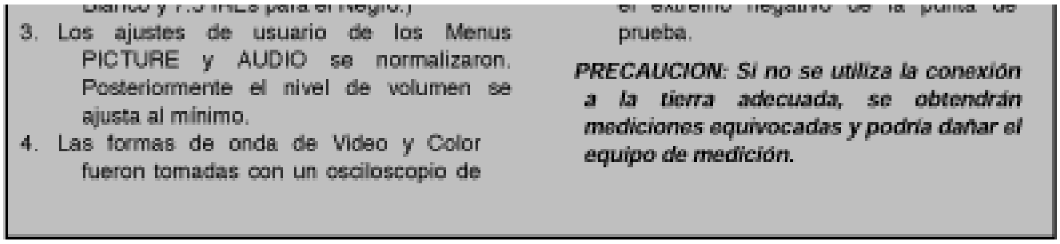
MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron.

banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.

5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

PRECAUCION: Si no se utiliza la conexión



Blanco y 7.5 IREs para el Negro.)

3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de

el extremo negativo de la punta de prueba.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

TOP PREVIOUS NEXT

20.30 Voltages

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

20.31 Waveforms

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

21 Parts Location

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

22 Parts list

TOP PREVIOUS NEXT

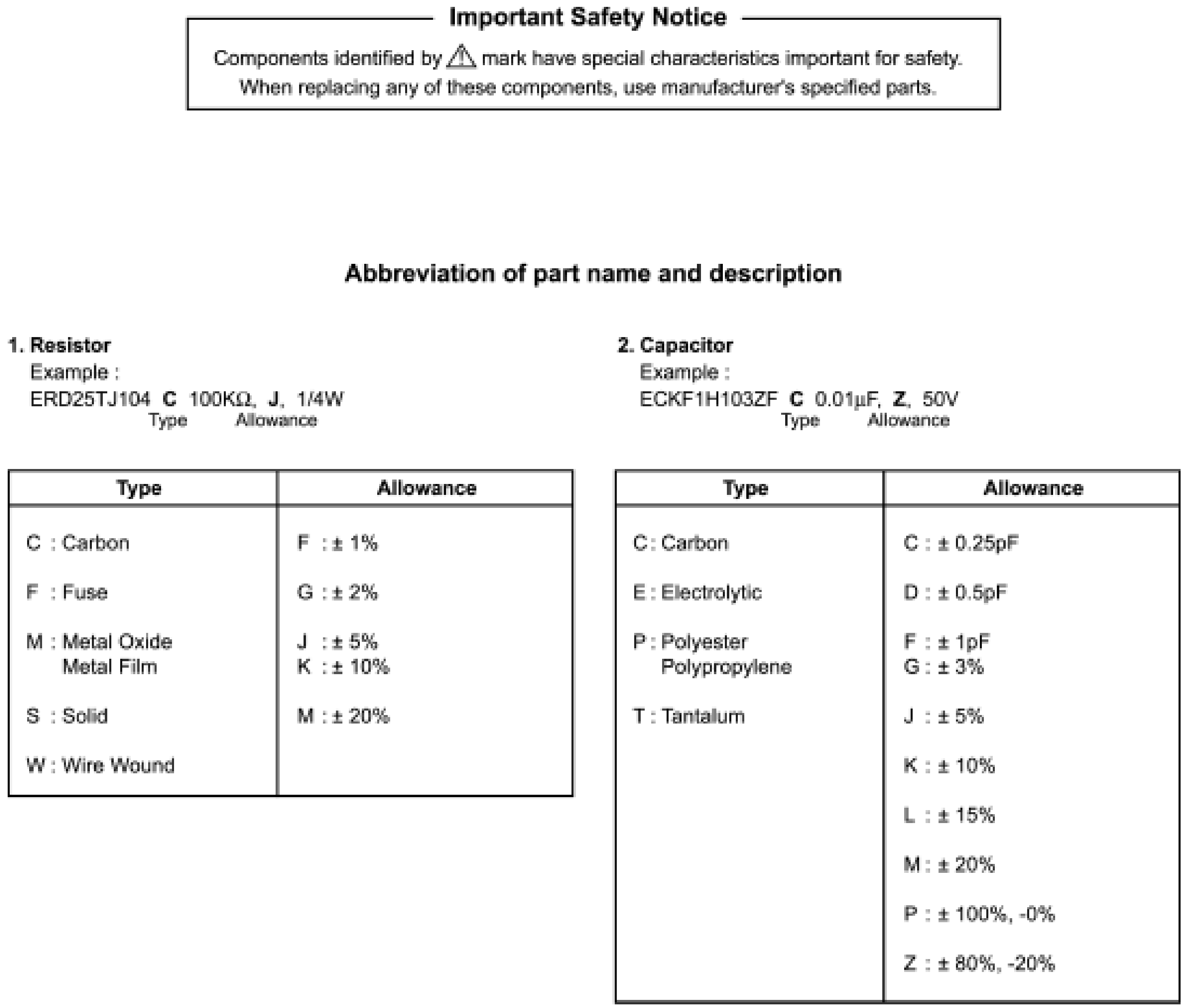
22.1 Description of abbreviations guide

22.2 Parts list

TOP PREVIOUS NEXT

22.1 Description of abbreviations guide

TOP PREVIOUS NEXT



Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor

Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor

Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

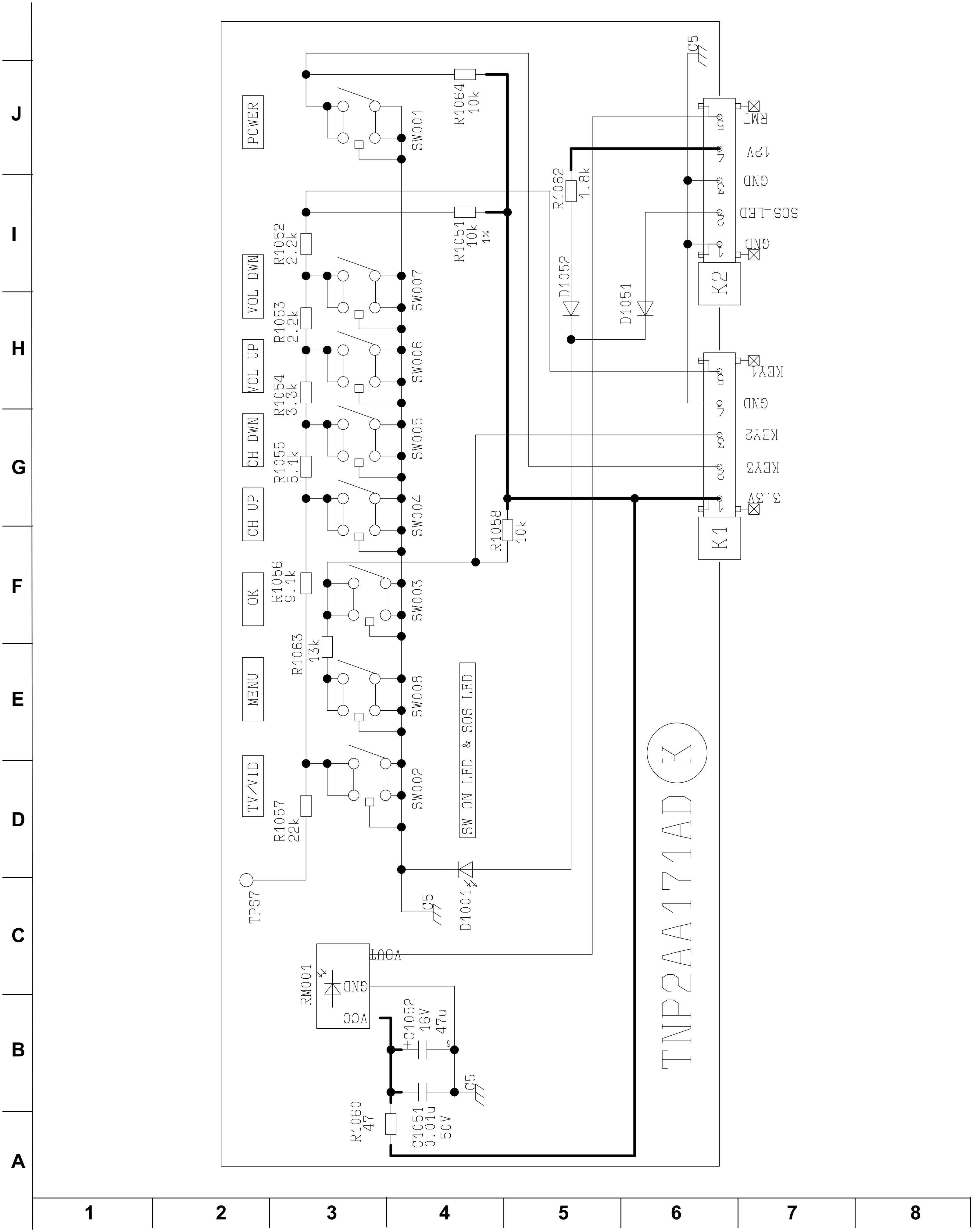
Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

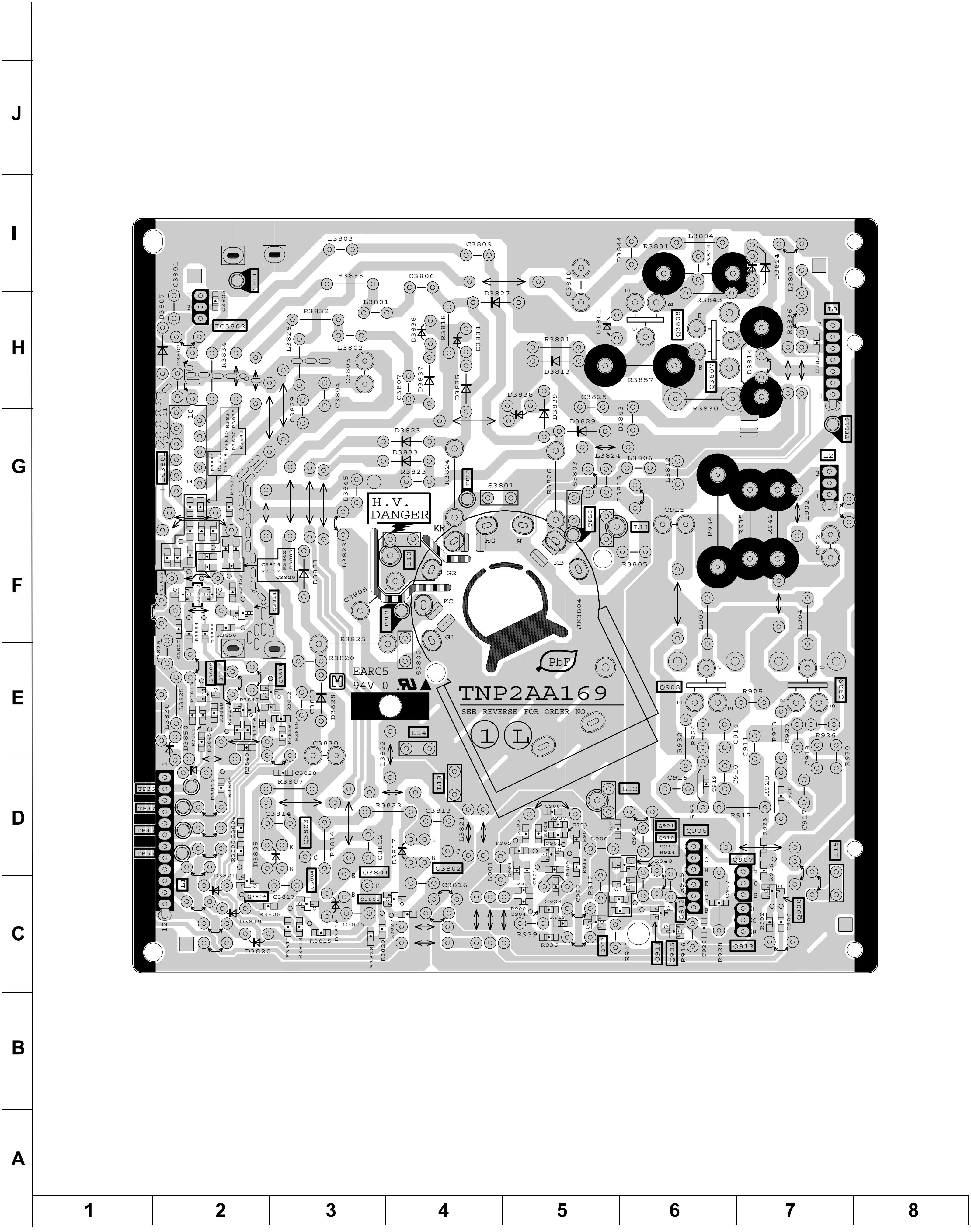
TOP PREVIOUS NEXT

22.2 Parts list

TOP PREVIOUS

Ref. No.	Part No.	Part Name & Description	Remarks
CAPACITORS			
C037	ECA0JM222B	CAP,E 2200UF-6.3V	
C038	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C047	ECA1HM330B	CAP,E 33UF-50V	
C048	ECA1HMR22B	CAP,E .22UF-50V	
C052	ECA1HM4R7B	CAP,E 4.7UF-50V	
C053	ECA1HM2R2B	CAP,E 2.2UF-50V	
C054	ECA1HM4R7B	CAP,E 4.7UF-50V	
C055	ECA1VM470B	CAP,E 47UF-35V	
C056	ECA1VM471B	CAP,E 470UF-35V	
C059	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C060	ECJ2VC1H101J	CAP,C 100PF-J-50V	
C061	ECA1HMR22B	CAP,E .22UF-50V	
C062	ECA1HM2R2B	CAP,E 2.2UF-50V	
C451	ECA1EM471B	CAP,E 470UF-25V	
C452	ECA1EM471B	CAP,E 470UF-25V	
C453	ECA1HM101B	CAP,E 100UF-50V	
C454	ECQV1H224JL3	CAP,P .22UF-J-50V	
C455	ECA1CM221B	CAP,E 10UF-16V	
C456	ECJ2VB1H472K	CAP,C .0047UF-K-50V	
C457	ECQB1H471JF3	CAP,P 470PF-J-50V	
C458	ECQV1H105JL3	CAP,P 1.0UF-J-50V	
C459	ECQE2104KF3	CAP,P .10UF-K-200V	
C460	ECQE2224KF3	CAP,P .22UF-K-200V	
C461	ECA1HM010B	CAP,E 1UF-50V	
C462	ECA0JM221B	CAP,E 220UF-6.3V	
C463	ECA1VM470B	CAP,E 47UF-35V	
C467	ECQV1H224JL3	CAP,P .22UF-J-50V	
C468	ECJ2VB1H272K	CAP,C .0027UF-K-50V	
C469	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C469	ECQB1H104JF3	CAP,P .10UF-J-50V	
C471	ECQB1H104JF3	CAP,P .10UF-J-50V	
C472	ECA1HM4R7B	CAP,E 4.7UF-50V	


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
POWER
VOL DWN
VOL UP
CH DWN
CH UP
OK
MENU
TV/VID
SW001
SW007
SW006
SW005
SW004
SW003
SW008
SW002
R1064 10k
R1051 10k 1%
R1052 2.2k
R1053 2.2k
R1054 3.3k
R1055 5.1k
R1056 9.1k
R1063 13k
R1057 22k
R1058 10k
R1062 1.8k
D1052
D1051
D1001
TP57
C5
SW ON LED & SOS LED
RM001
VOUT
GND
VCC
C1052 16V 47u
C1051 0.01u 50V
R1060 47
TNP2AA171AD
K
K2
RMT
12V
GND
SOS-LED
GND
K1
KEY1
GND
KEY2
KEY3
3.3V
5
4
3
2
1

J
I
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H.V.
DANGER
TNP2AA169
SEE REVERSE FOR ORDER NO.
1
L
EARC5
94V-0
PbF
JK3804
KR
HG
H
KB
G2
KG
G1
IC3801
IC3802
S3801
S3802
S3803
TPL1
TPL2
TPL3
TPL5
TPL11
TPL16
TP35
TP36
TP37
L1
L2
L3
L10
L11
L12
L13
L14
L15
L3801
L3802
L3803
L3804
L3806
L3807
L3812
L3813
L3821
L3822
L3823
L3824
L3825
L3826
L3830
L901
L902
L903
L904
L906
Q3801
Q3802
Q3803
Q3804
Q3805
Q3806
Q3807
Q3808
Q3809
Q3810
Q3811
Q3812
Q3813
Q3814
Q900
Q901
Q903
Q904
Q905
Q906
Q907
Q908
Q909
Q910
Q911
Q912
Q913
D3801
D3805
D3807
D3812
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D3814
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D3821
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D3831
D3833
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D3837
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D3839
D3843
D3844
D3845
D3850
R3805
R3807
R3814
R3818
R3820
R3821
R3822
R3823
R3824
R3825
R3826
R3830
R3831
R3832
R3833
R3834
R3836
R3843
R3844
R3857
R917
R925
R926
R930
R934
R935
R942
C3801
C3802
C3803
C3804
C3805
C3806
C3807
C3808
C3809
C3810
C3811
C3812
C3813
C3814
C3815
C3816
C3817
C3825
C3826
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C915
C916
C917
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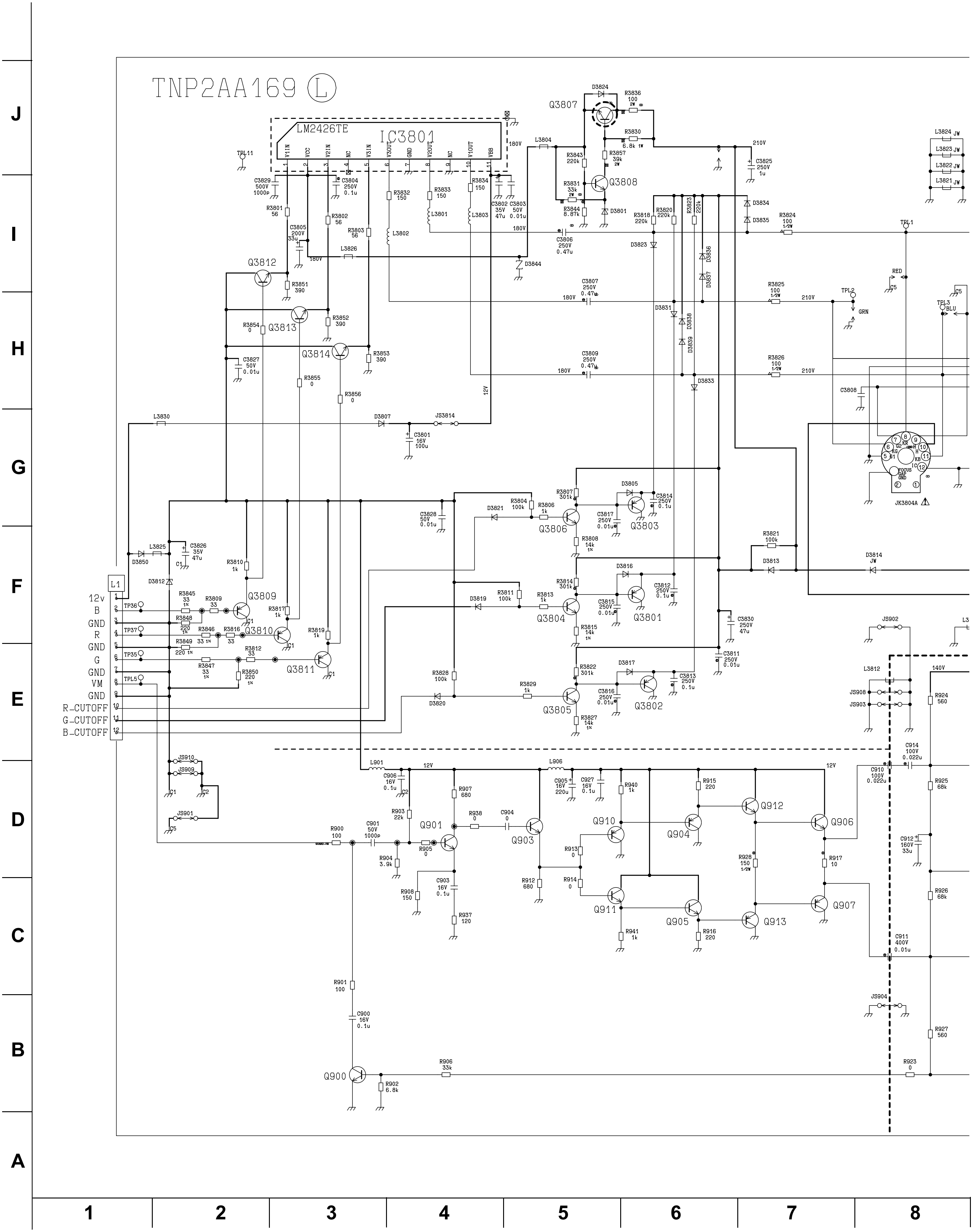
C920
C910
C911
C914


TNP2AA169 (L)
LM2426TE
IC3801
V1IN
VCC
V2IN
NC
V3IN
V3OUT
GND
V2OUT
NC
V1OUT
VBB
Q3807
Q3808
Q3812
Q3813
Q3814
Q3806
Q3803
Q3804
Q3801
Q3805
Q3802
Q3809
Q3810
Q3811
Q900
Q901
Q903
Q904
Q905
Q906
Q907
Q910
Q911
Q912
Q913
L1
12v
B
GND
R
GND
G
GND
VM
GND
R-CUTOFF
G-CUTOFF
B-CUTOFF
TPL11
TPL1
TPL2
TPL3
TPL5
TP35
TP36
TP37
RED
GRN
BLU
JK3804A
180V
210V
12V
140V
JS3814
JS902
JS903
JS904
JS908
JS909
JS910
JS901
J
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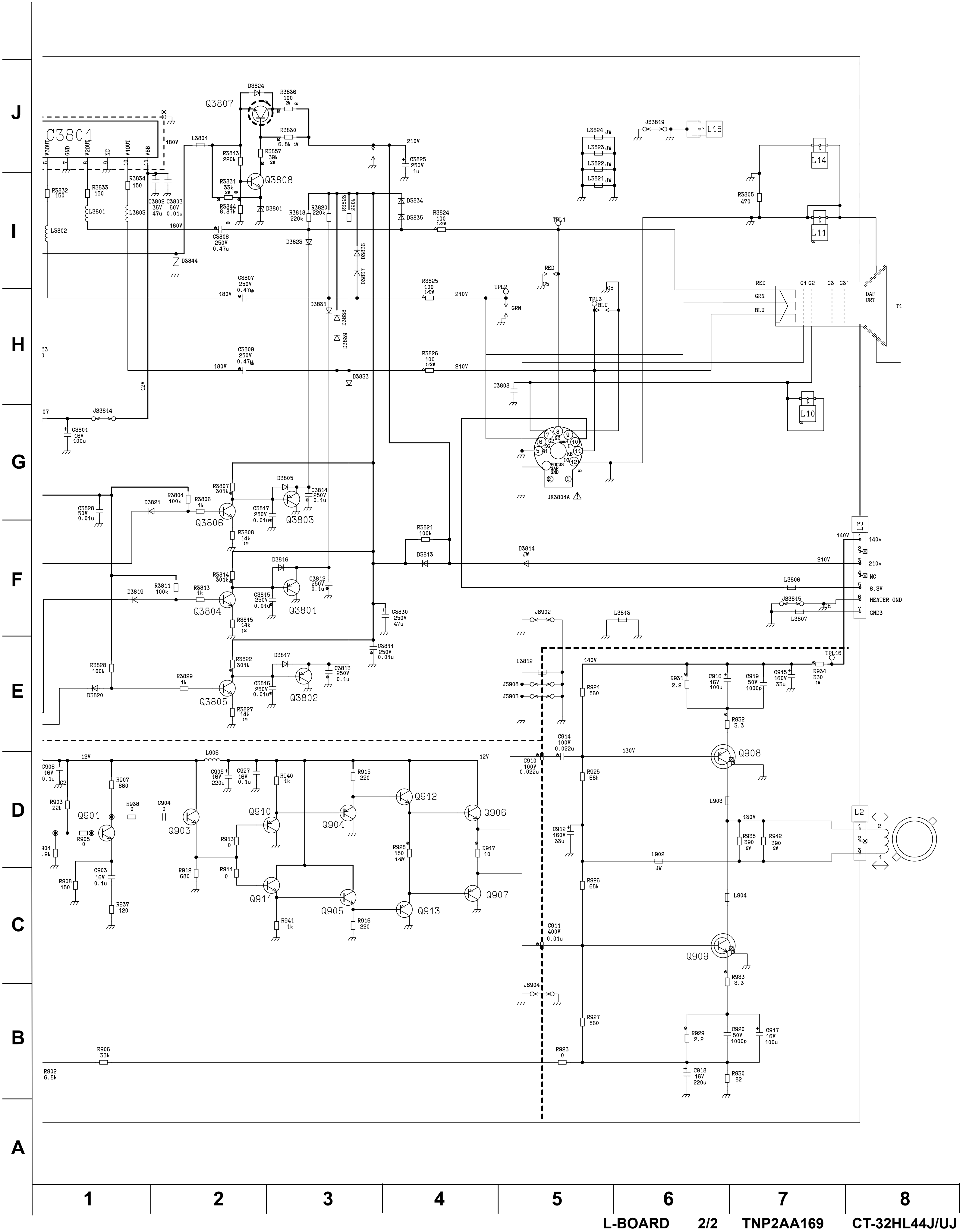
8

L-BOARD 1/2 TNP2AA169 CT-32HL44J/UJ


J
I
H
G
F
E
D
C
B
A
1
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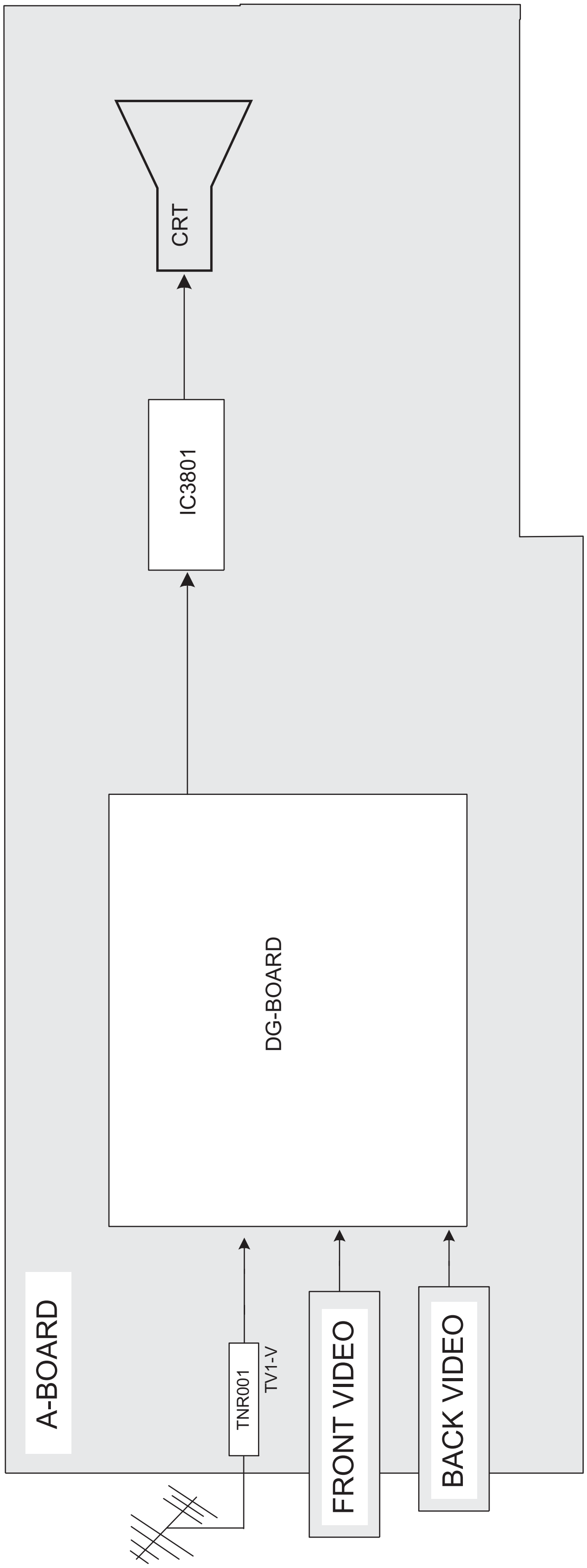
3
4
5
6
7
8
IC3801
V3OUT
GND
V2OUT
NC
V1OUT
VBB
180V
L3804
Q3807
D3824
R3836 100 2W
R3830 6.8k 1W
R3843 220k
R3857 39k 2W
210V
C3825 250V 1u
R3831 33k 2W
Q3808
R3844 8.87k
D3801
R3832 150
R3833 150
R3834 150
C3802 35V 47u
C3803 50V 0.01u
L3801
L3803
L3802
C3806 250V 0.47u
D3844
R3818 220k
R3820 220k
R3823 220k
D3823
D3834
D3835
R3824 100 1/2W
TPL1
D3836
D3837
C3807 250V 0.47u
R3825 100 1/2W
TPL2
GRN
RED
C5
TPL3
BLU
D3831
D3838
D3839
C3809 250V 0.47u
R3826 100 1/2W
D3833
12V
JS3814
C3801 16V 100u
C3808
L3824 JW
L3823 JW
L3822 JW
L3821 JW
JS3819
L15
L14
R3805 470
L11
L10
G1 G2 G3 G3'
DAF CRT
T1
JK3804A
FOCUS
GND
C3828 50V 0.01u
D3821
R3804 100k
R3806 1k
R3807 301k
Q3806
D3805
C3814 250V 0.1u
C3817 250V 0.01u
Q3803
R3808 14k 1%
R3821 100k
D3813
D3814 JW
L3
140V
140v
210v
NC
6.3V
HEATER GND
GND3
D3819
R3811 100k
R3813 1k
R3814 301k
Q3804
D3816
C3812 250V 0.1u
C3815 250V 0.01u
Q3801
R3815 14k 1%
C3830 250V 47u
C3811 250V 0.01u
L3806
JS3815
L3807
R3828 100k
D3820
R3829 1k
R3822 301k
Q3805
D3817
C3813 250V 0.1u
C3816 250V 0.01u
Q3802
R3827 14k 1%
JS902
L3813
L3812
JS908
JS903
TPL16
R931 2.2
C916 16V 100u
C919 50V 1000p
C915 160V 33u
R934 330 1W
R924 560
R932 3.3
C906 16V 0.1u
L906
C905 16V 220u
C927 16V 0.1u
R940 1k
R915 220
12V
C910 100V 0.022u
C914 100V 0.022u
130V
Q908
R907 680
R903 22k
Q901
R938 0
C904
Q903
Q910
Q904
Q912
Q906
R925 68k
L903
R905 0
R913 0
R928 150 1/2W
R917 10
C912 160V 33u
R935 390 2W
R942 390 2W
L2
L902 JW
R926 68k
R908 150
C903 16V 0.1u
R912 680
R914 0
Q911
Q905
Q913
Q907
L904
R937 120
R941 1k
R916 220
C911 400V 0.01u
Q909
JS904
R933 3.3
R929 2.2
C920 50V 1000p
C917 16V 100u
R927 560
R906 33k
R923 0
R902 6.8k
C918 16V 220u
R930 82


CRT
IC3801
DG-BOARD
A-BOARD
TNR001
TV1-V
FRONT VIDEO
BACK VIDEO

VIDEO BLOCK DIAGRAM CT-32HL44J/UJ

A-BOARD - TNP2AH061AD

IC1501	
1	5.39
2	1.56
3	1.47
4	0.00
5	6.27
6	5.88
7	4.10
8	11.93

IC1502	
1	6.27
2	4.19
3	4.19
4	0.00
5	8.12
6	8.12
7	8.12
8	11.93

IC1503	
1	6.08
2	4.08
3	3.25
4	0.00
5	4.09
6	0.00
7	2.24
8	11.93

IC2856	
1	15.27
2	3.28
3	0.00
4	1.25
5	6.71

IC2857	
1	15.27
2	2.42
3	0.00
4	1.26
5	6.71

IC2201	
1	0.00
2	0.00
3	0.00
4	2.25
5	2.19
6	0.00
7	4.98
8	2.34
9	2.53
10	0.00
11	2.24
12	3.33
13	3.41
14	2.18
15	3.43
16	3.52
17	0.00
18	4.72
19	4.69
20	0.00
21	2.22
22	2.22
23	0.00
24	0.00

IC2301	
1	-16.73
2	-16.73
3	0.00
4	17.51
5	9.28
6	4.99
7	0.00
8	2.55
9	0.00
10	0.00
11	0.00
12	5.26
13	0.00
14	-15.51
15	0.00
16	-5.44
17	0.00
18	0.00
19	0.00
20	0.00
21	9.25
22	17.51
23	0.00
24	-16.73
25	-6.28

IC2451			
1	4.45	16	8.91
2	0.00	17	4.88
3	4.48	18	0.00
4	4.45	19	3.84
5	4.46	20	3.84
6	4.49	21	4.45
7	4.49	22	4.49
8	4.49	23	4.49
9	1.34	24	4.49
10	4.49	25	4.49
11	1.47	26	4.84
12	1.43	27	4.84
13	4.67	28	4.27
14	4.73	29	4.50
15	0.00	30	4.45

IC006	
1	4.94
2	4.94
3	4.20
4	3.18
5	5.16
6	2.42
7	2.91
8	0.00
9	0.00
10	8.00
11	8.88
12	0.00
13	8.90
14	4.70
15	4.74
16	8.88

IC1401	
1	0.00
2	2.13
3	1.27
4	0.00
5	0.50
6	1.27
7	0.00
8	8.91

IC2305	
1	7.76
2	0.00
3	0.00
4	0.00
5	4.49
6	4.44
7	4.44
8	8.91

IC002	
1	0.00
2	0.00
3	0.00
4	0.00
5	3.28
6	3.29
7	0.00
8	3.28

IC2851	
1	14.87
2	11.94
3	0.00
4	9.62

A-BOARD - TNP2AH061AD

	Q002	Q013	Q804	Q1401	Q1501	Q1502
B	2.97	2.25	4.27	0.00	6.06	6.06
E	0.00	7.35	0.50	8.91	11.93	0.00
C	0.00	4.94	0.00	0.00	6.13	6.12

	Q1504	Q1505	Q1511	Q1512	Q2301	Q2302
B	0.00	9.15	5.39	5.40	0.00	0.00
E	5.87	5.87	11.31	0.00	0.00	15.26
C	0.00	9.76	5.22	5.22	0.00	0.00

	Q2303	Q2304	Q2306	Q2307	Q2310	Q2314
B	0.00	0.00	15.26	0.00	15.26	0.00
E	0.00	0.00	0.00	0.00	0.00	15.26
C	0.00	0.00	10.47	0.00	10.47	0.00

	Q2317	Q2318	Q2881
B	0.00	0.00	3.27
E	0.00	0.00	0.00
C	0.00	0.00	3.28

D-BOARD - TNP2AH062AD

IC507	
1	0.00
2	0.00
3	0.00
4	0.00
5	3.18
6	3.05
7	3.62
8	11.93

IC805	
1	34.00
2	7.31
3	0.00
4	1.25
5	4.46

IC500	
1	99.40
2	99.40
3	99.40
4	102.50
5	91.40
6	98.70
7	98.70
8	103.90
9	99.80
10	104.90

IC501	
R	0.00
A	0.00
K	11.92

IC451	
1	-16.03
2	-16.04
3	-16.03
4	0.72
5	15.90
6	-14.50
7	9.98
8	-5.62
9	0.00
10	-12.44
11	0.00
12	0.98
13	0.99
14	0.00
15	14.98
16	14.98
17	-16.03
18	-16.04
19	-16.04
20	-16.03

IC502	
1	2.52
2	11.87
3	1.99
4	1.31
5	4.05
6	0.00
7	0.00
8	0.00
9	0.00
10	11.87
11	7.34
12	7.34
13	2.71
14	0.00
15	0.00
16	0.00

IC802	
1	131.00
2	11.98
3	0.00

D-BOARD - TNP2AH062AD

	Q404	Q405	Q406	Q459	Q511	Q512	Q513	Q514
B	0.65	0.00	0.66	3.61	6.76	7.30	0.68	0.71
E	0.00	11.05	0.00	78.40	0.00	11.91	0.00	0.00
C	0.00	0.00	0.00	3.05	7.34	6.76	0.00	0.00

	Q515	Q516	Q551	Q702	Q703	Q704	Q820	Q821
B	11.10	0.70	0.00	0.54	2.06	2.06	-15.39	14.76
E	11.87	0.00	-0.98	2.07	11.93	0.00	-16.06	15.35
C	11.91	0.00	0.00	0.00	2.13	2.13	-16.10	15.44

	Q822	Q823	Q824	Q825	Q826	Q827	Q831
B	14.02	0.70	14.66	0.00	0.70	139.10	15.03
E	14.63	0.00	15.37	1.15	0.00	0.00	0.00
C	14.82	0.00	15.43	0.00	0.00	139.50	15.35

	Q501	Q560	Q701
G	5.22	207.50	2.13
D	8.77	98.80	24.15
S	0.00	210.40	0.00

L-BOARD - TNP2AA169

IC3801	
1	2.35
2	178.70
3	2.25
4	0.00
5	2.31
6	126.00
7	0.00
8	129.10
9	0.00
10	125.00
11	11.15

L-BOARD - TNP2AA169

	Q3806	Q3804	Q3805	Q3802	Q901	Q903	Q904
B	2.50	2.22	2.08	174.70	1.59	6.77	6.74
E	166.80	172.90	0.00	0.00	0.00	11.01	0.00
C	1.96	1.68	1.55	180.20	0.94	6.11	7.38

	Q910	Q911	Q905	Q912	Q906	Q907	Q913
B	6.11	6.12	5.49	7.38	6.75	5.53	4.86
E	0.00	0.00	10.92	10.92	10.92	0.00	0.00
C	6.74	5.49	4.85	6.74	6.16	6.12	5.53

	Q900	Q909	Q908	Q3808	Q3809	Q3810	Q3811
B	0.00	0.99	137.10	6.73	2.34	2.24	2.29
E	0.00	63.00	62.60	9.40	0.00	0.00	0.00
C	0.00	0.50	137.70	6.12	3.00	2.89	2.95

	Q3814	Q3813	Q3812	Q3807
B	2.95	2.89	2.99	179.20
E	11.05	0.00	11.05	207.50
C	2.32	2.27	0.00	178.70

G-BOARD - TNP2AA170AD

IC5801	
1	4.10
2	0.00
3	2.40
4	0.00
5	4.11
6	7.94
7	4.00
8	8.91

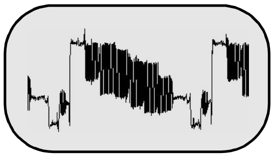
IC5802	
1	-1.47
2	-1.47
3	0.00
4	0.00
5	-16.13
6	2.91
7	2.91
8	2.91
9	2.91
10	15.43

DF-BOARD - TNP2AA172AB

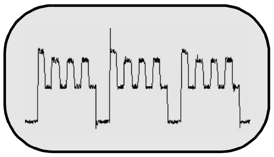
	Q563	Q564	Q566	Q565
B	1.27	0.81	0.50	2.82
E	147.40	0.73	2.86	11.49
C	0.99	0.00	0.00	3.08

	Q562	Q561
G	8.00	3.07
D	47.57	102.00
S	0.00	0.00

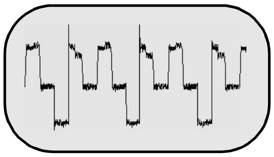
A-Board TNP2AH061AD



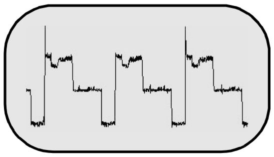
① **1.0 Vp-p**
TNR001 (MAIN VIDEO)



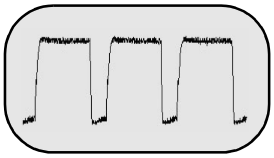
② **3.08 Vp-p**
L1 PIN 2 (BLUE OUT)



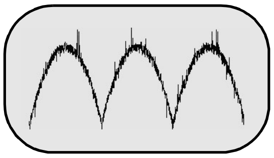
③ **2.68 Vp-p**
L1 PIN 4 (RED OUT)



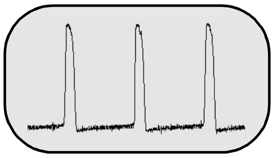
④ **2.76 Vp-p**
L1 PIN 6 (GREEN OUT)



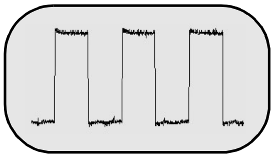
⑤ **3.20 Vp-p**
A8 PIN 1



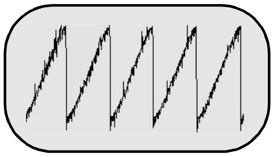
⑥ **0.88 Vp-p**
A8 PIN 3 (V-DAF)



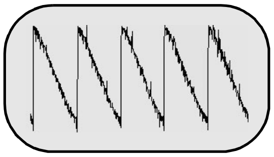
⑦ **3.12 Vp-p**
A8 PIN 13 (FBP)



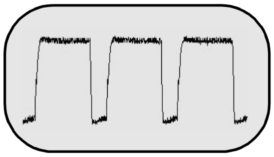
⑧ **11.3 Vp-p**
A8 PIN 16 (H DRIVE)



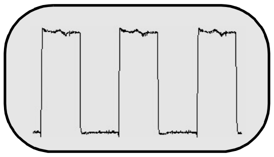
⑨ **1.74 Vp-p**
A7 PIN 4 (V_DRIVE)



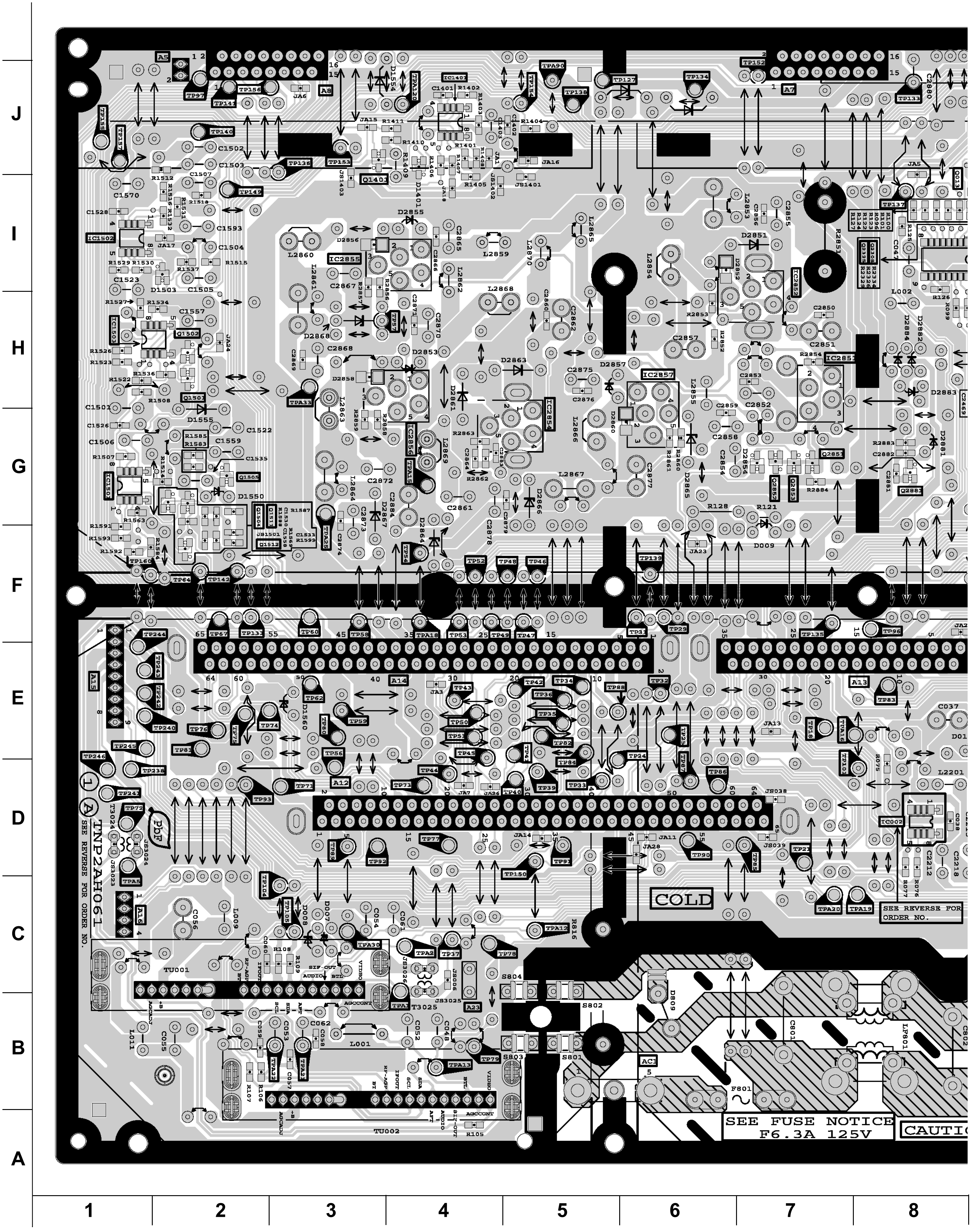
⑩ **1.98 Vp-p**
A7 PIN 7 (V_DRIVE)



⑪ **3.28 Vp-p**
A7 PIN 9



⑫ **11.4 Vp-p**
A6 PIN 4



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TNP2AH061
SEE REVERSE FOR ORDER NO.
COLD
SEE REVERSE FOR ORDER NO.
SEE FUSE NOTICE
F6.3A 125V
CAUTIO
TU001
TU002
F801
IC1401
IC1502
IC1503
IC1505
IC2855
IC2856
IC2854
IC2857
IC2853
IC2851
IC002
Q1401
Q1502
Q1501
Q1505
Q1512
Q2851
Q2852
Q2853
Q2881
Q013
L2860
L2861
L2862
L2859
L2868
L2870
L2863
L2864
L2865
L2866
L2867
L2869
L2853
L2854
L2855
L002
L2201
L001
L009
LF801
D1554
D1401
D1503
D1555
D1550
D1560
D2855
D2856
D2868
D2853
D2858
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D2864
D2851
D2852
D2854
D2884
D2882
D2883
D2881
D009
D008
D007
D809
C1502
C1503
C1507
C1570
C1593
C1504
C1523
C1505
C1557
C1501
C1522
C1506
C1559
C1535
C2865
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C2855
C2856
C2880
C2881
C2882
C2469
C047
C037
C056
C055
C054
C061
C060
C059
C053
C058
C062
C052
C048
C057
C801
C802
C2212
C2218
R1411
R1410
R1409
R1406
R1407
R1408
R1405
R1401
R1402
R1403
R1404
R1512
R1516
R1518
R1531
R1532
R1529
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R1523
R1536
R1522
R1508
R1585
R1583
R1507
R1514
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R1584
R1587
R1588
R1599
R2857
R2856
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R2853
R2852
R2854
R2851
R2883
R2884
R128
R121
R126
R099
R075
R076
R077
R108
R109
R107
R106
R105
R816
S804
S802
S803
S801
A5
A7
A8
A12
A13
A14
A15
A16
A23
AC1
JA6
JA15
JA16
JA17
JA24
JA5
JA3
JA7
JA26
JA13
JA14
JA11
JA28
JA23
JS1401
JS1402
JS1403
JS1501
JS038
JS039
JS3023
JS3024
JS3025
JS3026
JS006
T3024
T3025
TP97
TP141
TP156
TP155
TP157
TP140
TP136
TP153
TP149
TPA120
TPA90
TP154
TP138
TP127
TP134
TP152
TP133
TP137
TP57
TPA33
TPA15
TPA25
TP54
TP160
TP64
TP142
TP52
TP48
TP46
TP139
TP67
TP131
TP60
TP58
TPA18
TP53
TP49
TP47
TP31
TP29
TP135
TP96
TP244
TP243
TP242
TP240
TP245
TP246
TP238
TP241
TP72
TPA5
TP62
TP76
TP75
TP74
TP81
TP59
TP80
TP56
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TP93
TP73
TP44
TP45
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TP51
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TP42
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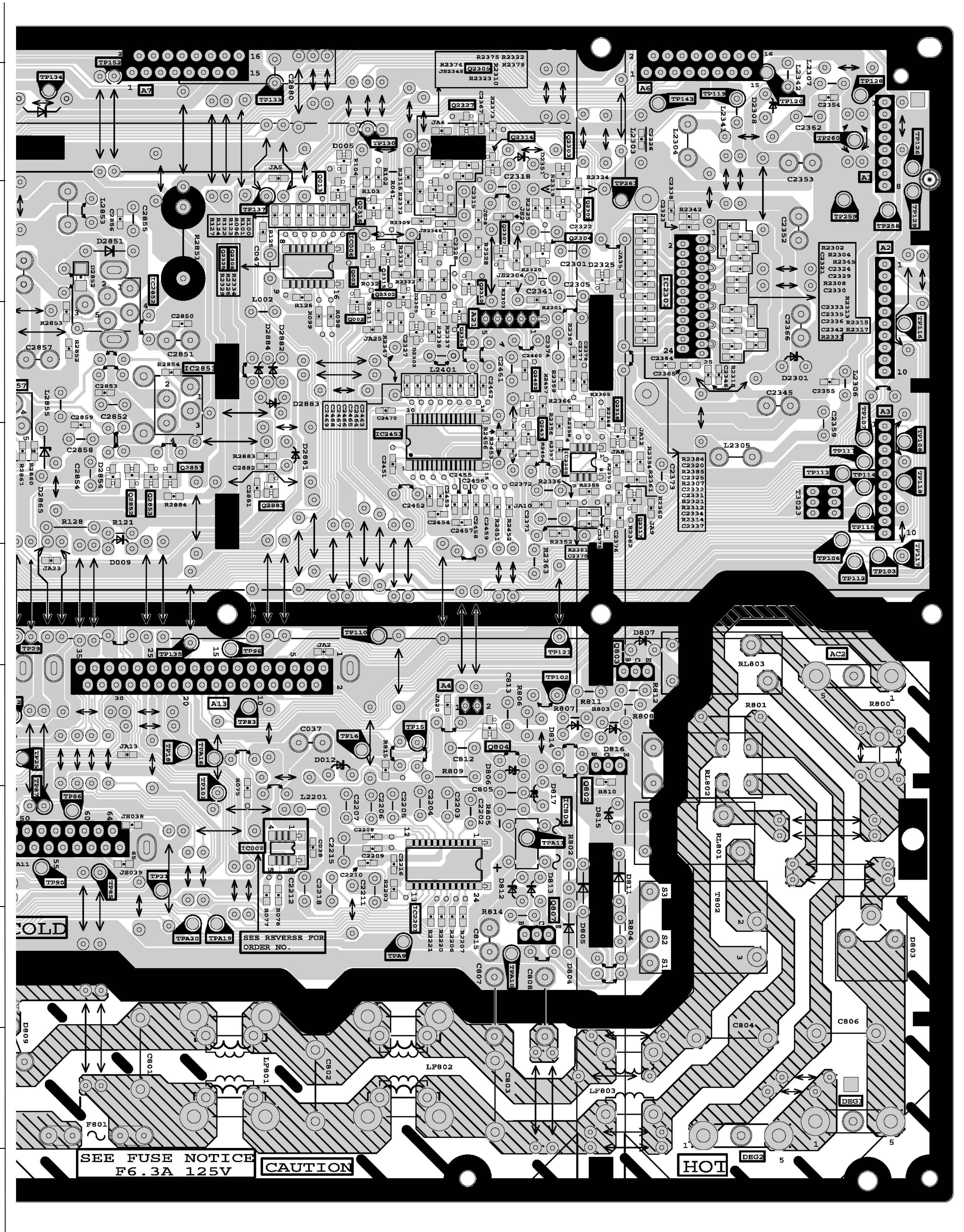
TP36
TP35
TP82
TP84
TP41
TP39
TP33
TP40
TP88
TP32
TP24
TP25
TP87
TP86
TP18
TPA16
TP101
TP83
TP89
TP92
TP77
TP91
TP150
TP90
TP85
TP21
TPA20
TPA19
TP104
TP105
TPA30
TPA2
TP37
TP78
TPA1
TPA12
TPA22
TPA21
TPA13
TP79
AGCCONT
AGCADJ
+B
BT
RF-AGP
IFOUT
SCL
SDA
AFT
AUDIO
SIF-OUT
VIDEO

A-BOARD 1/2 TNP2AH061 CT-32HL44J/UJ


J
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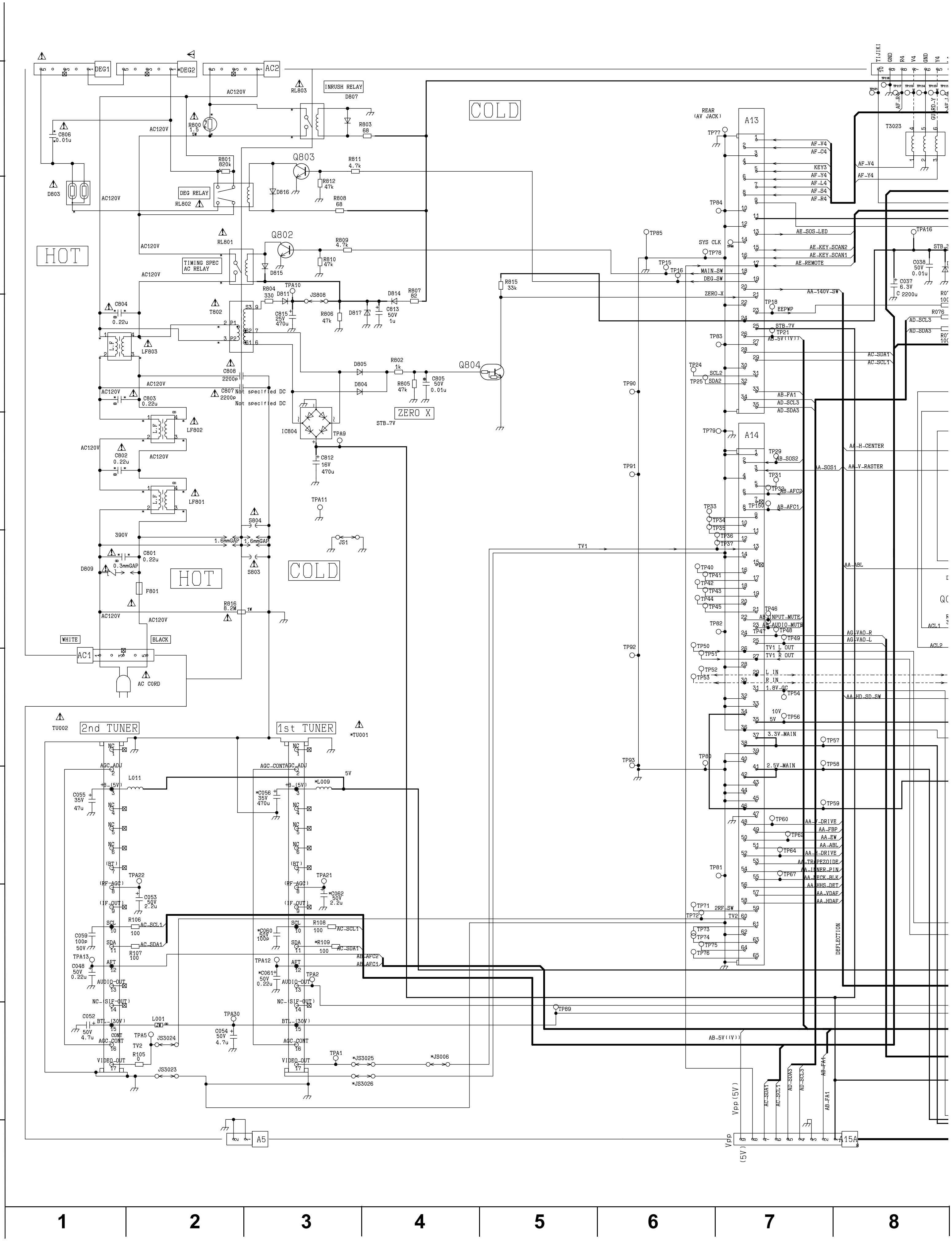
SEE FUSE NOTICE
F6.3A 125V
CAUTION
HOT
COLD
SEE REVERSE FOR
ORDER NO.
F801
LF801
LF802
LF803
C801
C802
C803
C804
C806
RL801
RL802
RL803
T802
D803
D809
IC002
IC804
IC2451
IC2851
IC2301
IC2305
IC2201
A1
A2
A3
A4
A6
A7
A13
A21
AC2
DEG1
DEG2


J
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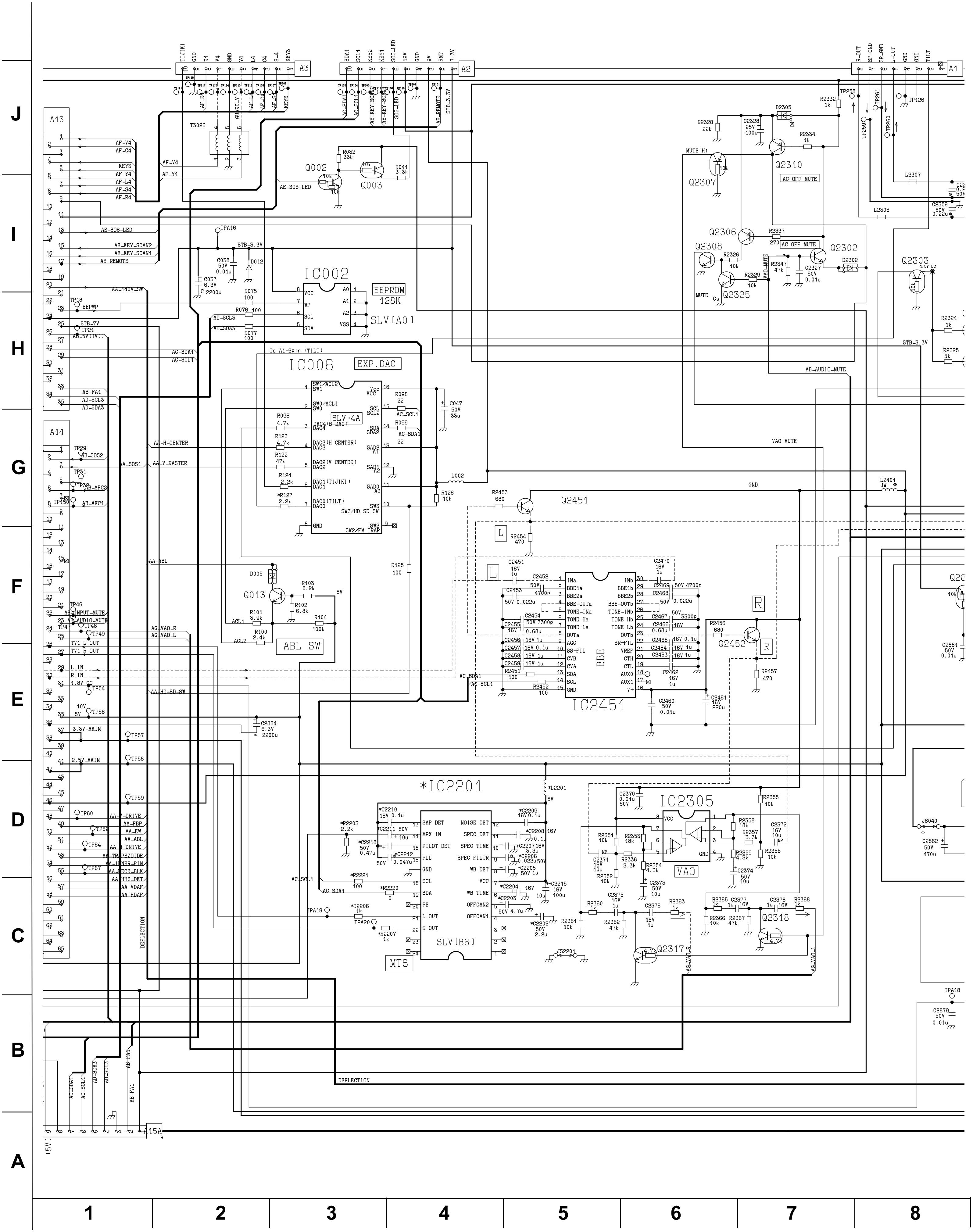
8
DEG1
*DEG2
AC2
AC120V
RL803
INRUSH RELAY
D807
COLD
C806 0.01u
R800 1.5 5W
R803 68
R801 820k
Q803
R811 4.7k
D803
DEG RELAY
RL802
D816
R812 47k
R808 68
HOT
RL801
Q802
R809 4.7k
TIMING SPEC AC RELAY
D815
R810 47k
C804 0.22u
R804 330
TPA10
D811
JS808
D814
R807 82
T802
C815 25V 470u
R806 47k
D817
C813 50V 1u
LF803
C808 2200p
D805
R802 1k
Q804
C807 2200p
Not specified DC
D804
R805 47k
C805 50V 0.01u
C803 0.22u
ZERO X
STB-7V
LF802
IC804
TPA9
C802 0.22u
C812 16V 470u
LF801
TPA11
S804
390V
1.6mmGAP
JS1
C801 0.22u
D809
0.3mmGAP
S803
F801
R816 8.2M 1W
WHITE
BLACK
AC1
AC CORD
R815 33k
TU002
2nd TUNER
1st TUNER
*TU001
AGC-ADJ
+B-(5V)
L011
C055 35V 47u
AGC-CONT
*C056 35V 470u
*L009
5V
NC
(BT)
TPA22
TPA21
(RF-AGC)
C053 50V 2.2u
*C062 50V 2.2u
(IF-OUT)
R106 100
AC-SCL1
C059 100p 50V
SDA
R107 100
AC-SDA1
*C060 50V 100p
R108 100
*R109 100
AFT
TPA13
C048 50V 0.22u
AB-AFC2
AB-AFC1
TPA12
*C061 50V 0.22u
AUDIO-OUT
TPA2
NC-(SIF-OUT)
C052 50V 4.7u
BTL-(30V)
L001
TPA30
C054 50V 4.7u
TPA5
TV2
R105 0
JS3024
VIDEO-OUT
JS3023
TPA1
*JS3025
*JS006
*JS3026
A5
REAR (AV JACK)
A13
TP77
AF-V4
AF-C4
KEY3
AF-Y4
AF-L4
AF-S4
AF-R4
TP84
TP85
AE-SOS-LED
SYS CLK
TP78
AE-KEY-SCAN2
AE-KEY-SCAN1
AE-REMOTE
TP15
TP16
MAIN-SW
DEG-SW
ZERO-X
AA-140V-SW
TP18
EEPWP
STB-7V
TP21
AB-5V((V))
TP83
TP24
SCL2
TP25
SDA2
AC-SDA1
AC-SCL1
TP90
AB-FA1
AD-SCL3
AD-SDA3
TP79
A14
TP29
AB-SOS2
AA-H-CENTER
AA-SOS1
AA-V-RASTER
TP91
TP31
TP32
AB-AFC2
TP150
AB-AFC1
TP33
TP34
TP35
TP36
TP37
TV1
TP40
TP41
TP42
TP43
TP44
TP45
AA-ABL
TP46
AB-INPUT-MUTE
AB-AUDIO-MUTE
TP82
TP47
TP48
TP49
AG-VAO-R
AG-VAO-L
TP92
TP50
TP51
TV1 L OUT
TV1 R OUT
TP52
TP53
L IN
R IN
1.8V-GC
TP54
AA-HD-SD-SW
10V
5V
TP56
TP93
3.3V-MAIN
TP57
TP80
2.5V-MAIN
TP58
TP59
TP60
AA-V-DRIVE
AA-FBP
TP62
AA-EW
AA-ABL
TP64
AA-H-DRIVE
AA-TRAPEZOIDE
AA-INNER-PIN
TP81
TP67
AA-NECK-BLK
AA-HHS-DET
AA-VDAF
AA-HDAF
TP71
TP72
2RF-SW
TV2
TP73
TP74
TP75
TP76
DEFLECTION
TP89
AB-5V((V))
Vpp(5V)
Vpp (5V)
AC-SDA1
AC-SCL1
AD-SDA3
AD-SCL3
AB-FA1
A15A
TIJIKI
GND
R4
V4
Y4
T3023
AF-V4
AF-Y4
GUARD-Y
TPA16
STB
C038 50V 0.01u
C037 6.3V 2200u
R076
AD-SCL3
AD-SDA3
ACL1
ACL2


A13
A14
A15A
A3
A2
A1
IC002
EEPROM
128K
SLV[A0]
IC006
EXP.DAC
SLV[4A]
ABL SW
IC2451
BBE
*IC2201
SLV[B6]
MTS
IC2305
VAO
Q002
Q003
Q013
Q2451
Q2452
Q2302
Q2303
Q2306
Q2307
Q2308
Q2310
Q2317
Q2318
Q2325
AC OFF MUTE
MUTE H
T3023
L002
L2201
L2306
L2307
L2401
D005
D012
D2302
D2305
STB-3.3V
AB-AUDIO-MUTE
VAO MUTE
GND
DEFLECTION
To A1-2pin (TILT)
J
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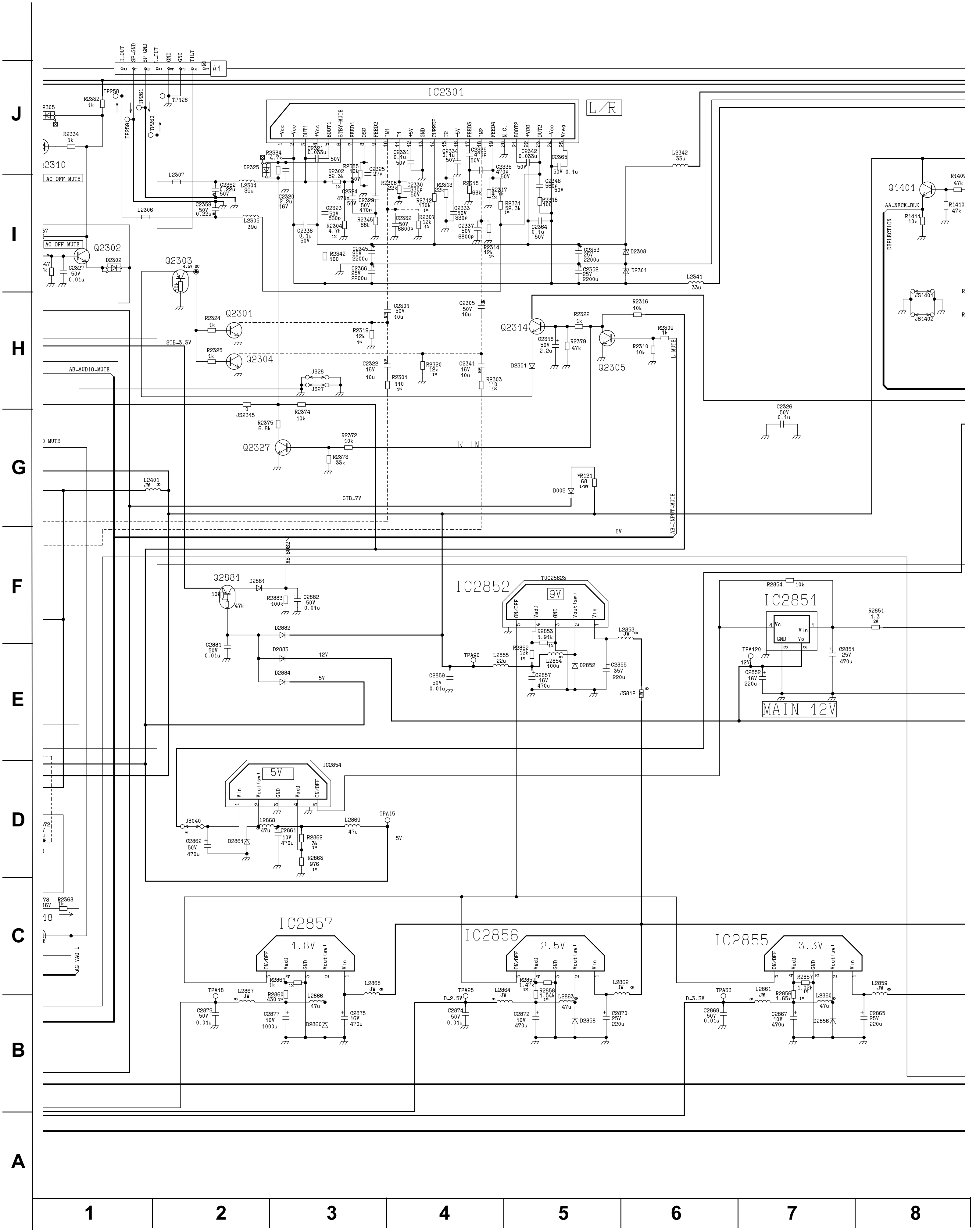

J
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A
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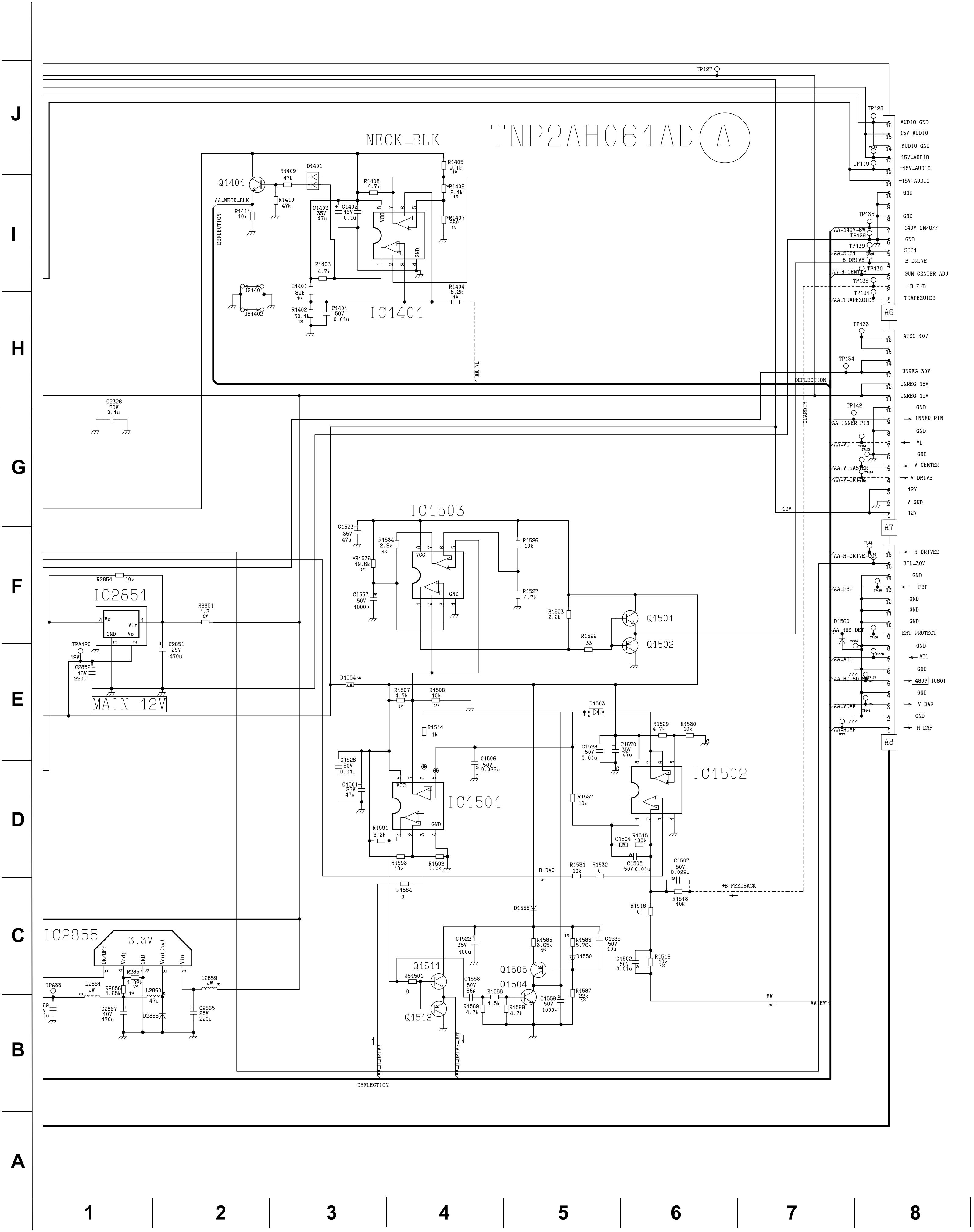
8
R_OUT
SP_GND
SP_GND
L_OUT
GND
GND
TILT
A1
IC2301
L/R
-Vcc
OUT1
+Vcc
BOOT1
STBY-MUTE
FEED1
OSC
FEED2
IN1
T1
+5V
GND
CURREF
T2
-5V
FEED3
IN2
FEED4
N.C.
BOOT2
+VCC
OUT2
Vreg
TP258
TP261
TP260
TP259
TP126
R2332 1k
R2334 1k
AC OFF MUTE
Q2302
D2302
C2327 50V 0.01u
Q2303
4.5V DC
Q2301
Q2304
R2324 1k
R2325 1k
STB-3.3V
AB-AUDIO-MUTE
L2307
L2306
L2304 39u
L2305 39u
C2362 0.22u 50V
C2359 50V 0.22u
D2325
R2384 4.7k
C2320 2.2u 16V
C2321 0.033u
C2338 0.1u 50V
C2323 50V 560p
R2302 52.3k
R2304 4.7k
R2342 100
R2305 10k
C2324 470p
C2325 27p
C2329 50V 470p
R2345 68k
C2345 25V 2200u
C2366 25V 2200u
R2308 22k
C2331 0.1u 50V
C2330 330p 50V
C2332 50V 6800p
R2312 130k
R2307 12k
R2313 22k
C2334 0.1u 50V
C2333 50V 330p
R2315 68k
C2335 470p 50V
C2337 50V 6800p
R2317 4.7k
C2336 470p 50V
R2314 12k
R2331 52.3k
C2342 0.033u
C2346 560p 50V
R2318 100
C2364 0.1u 50V
C2365 50V 0.1u
C2353 25V 2200u
C2352 25V 2200u
D2308
D2301
L2342 33u
L2341 33u
C2301 50V 10u
C2305 50V 10u
R2319 12k
C2322 16V 10u
R2301 110
R2320 12k
C2341 16V 10u
R2303 110
JS28
JS27
Q2314
C2318 50V 2.2u
R2322 1k
R2379 47k
D2351
R2316 10k
Q2305
R2309 1k
R2310 10k
L MUTE
JS2345
R2374 10k
R2375 6.8k
Q2327
R2372 10k
R2373 33k
R IN
*R121 68 1/2W
D009
STB-7V
L2401 JW
5V
AB-INPUT-MUTE
AB-5VS2
Q2881
D2881
R2883 100k
C2882 50V 0.01u
C2881 50V 0.01u
D2882
D2883
D2884
12V
5V
IC2852
TUC25623
9V
ON/OFF
Vadj
GND
Vout(sw)
Vin
R2853 1.91k
R2852 12k
L2854 100u
D2852
C2857 16V 470u
C2855 35V 220u
L2853 JW
JS812
TPA90
L2855 22u
C2859 50V 0.01u
R2854 10k
IC2851
Vc
Vin
GND
Vo
R2851 1.3 2W
TPA120
12V
C2852 16V 220u
C2851 25V 470u
MAIN 12V
IC2854
5V
JS040
C2862 50V 470u
D2861
L2868 47u
C2861 10V 470u
R2862 3k
R2863 976
L2869 47u
TPA15
5V
IC2857
1.8V
R2864 1k
R2860 430
C2877 10V 1000u
L2866 47u
D2860
C2875 16V 470u
L2865 JW
TPA18
L2867 JW
C2879 50V 0.01u
IC2856
2.5V
R2859 1.47k
R2858 1.54k
L2863 47u
D2858
C2870 25V 220u
L2862 JW
TPA25
D-2.5V
L2864 JW
C2874 50V 0.01u
C2872 10V 470u
IC2855
3.3V
R2857 1.02k
R2856 1.65k
L2860 47u
D2856
C2865 25V 220u
L2859 JW
TPA33
D-3.3V
L2861 JW
C2869 50V 0.01u
C2867 10V 470u
Q1401
R1409 47k
R1410 47k
R1411 10k
AA-NECK-BLK
DEFLECTION
JS1401
JS1402
C2326 50V 0.1u
D2305
R2368 1k
AG-VAO-L



TNP2AH061AD A
NECK-BLK
Q1401
AA-NECK-BLK
DEFLECTION
R1409 47k
D1401
R1410 47k
R1411 10k
R1408 4.7k
R1405 9.1k 1%
*R1406 2.1k 1%
*R1407 680 1%
C1403 35V 47u
C1402 16V 0.1u
VCC
GND
R1403 4.7k
R1401 39k 1%
R1402 30.1k 1%
C1401 50V 0.01u
R1404 8.2k 1%
IC1401
JS1401
JS1402
AA-VL
C2326 50V 0.1u
TP127
TP128
AUDIO GND
15V-AUDIO
AUDIO GND
15V-AUDIO
TP119
-15V-AUDIO
-15V-AUDIO
GND
TP135
GND
AA-140V-SW
TP129
140V ON/OFF
GND
TP139
AA-SOS1
SOS1
B-DRIVE
B DRIVE
TP130
AA-H-CENTER
GUN CENTER ADJ
TP138
+B F/B
TP131
AA-TRAPEZUIDE
TRAPEZUIDE
A6
TP133
ATSC-10V
TP134
UNREG 30V
DEFLECTION
UNREG 15V
UNREG 15V
TP142
GND
AA-INNER-PIN
INNER PIN
GND
AA-VL
VL
GND
AA-V-RASTER
V CENTER
AA-V-DRIVE
V DRIVE
12V
V GND
12V
12V
A7
GUARD-H
H DRIVE2
AA-H-DRIVE
BTL-30V
GND
AA-FBP
FBP
GND
GND
GND
D1560
AA-HHS-DET
EHT PROTECT
GND
AA-ABL
ABL
GND
AA-HD-SD
480P 1080I
GND
AA-VDAF
V DAF
GND
AA-HDAF
H DAF
A8
IC1503
C1523 35V 47u
R1534 2.2k 1%
*R1536 19.6k 1%
C1557 50V 1000p
R1526 10k
R1527 4.7k
R1523 2.2k
R1522 33
Q1501
Q1502
R2854 10k
IC2851
Vc
Vin
GND
Vo
R2851 1.3 2W
C2851 25V 470u
TPA120
12V
C2852 16V 220u
MAIN 12V
D1554
R1507 4.7k 1%
R1508 10k
R1514 1k
C1506 50V 0.022u
C1526 50V 0.01u
C1501 35V 47u
IC1501
R1591 2.2k
R1593 10k
R1592 1.5k
R1584 0
D1503
R1529 4.7k
R1530 10k
C1528 50V 0.01u
C1570 35V 47u
IC1502
R1537 10k
C1504
R1515 100k
C1505 50V 0.01u
C1507 50V 0.022u
B DAC
R1531 10k
R1532 0
+B FEEDBACK
R1518 10k
R1516 0
D1555
IC2855
3.3V
ON/OFF
Vadj
GND
Vout(sw)
Vin
R2857 1.02k 1%
R2856 1.65k 1%
L2860 47u
D2856
L2859 JW
L2861 JW
TPA33
C2867 10V 470u
C2865 25V 220u
C1522 35V 100u
R1585 3.65k 1%
R1583 5.76k 1%
C1535 50V 10u
D1550
Q1511
Q1505
Q1504
JS1501 0
C1558 50V 68p
R1588 1.5k
R1569 4.7k
R1599 4.7k
C1559 50V 1000p
R1587 22k 1%
Q1512
C1502 50V 0.01u
R1512 10k 1%
EW
AA-EW
AA-H-DRIVE
AA-H-DRIVE-OUT
DEFLECTION
J
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A
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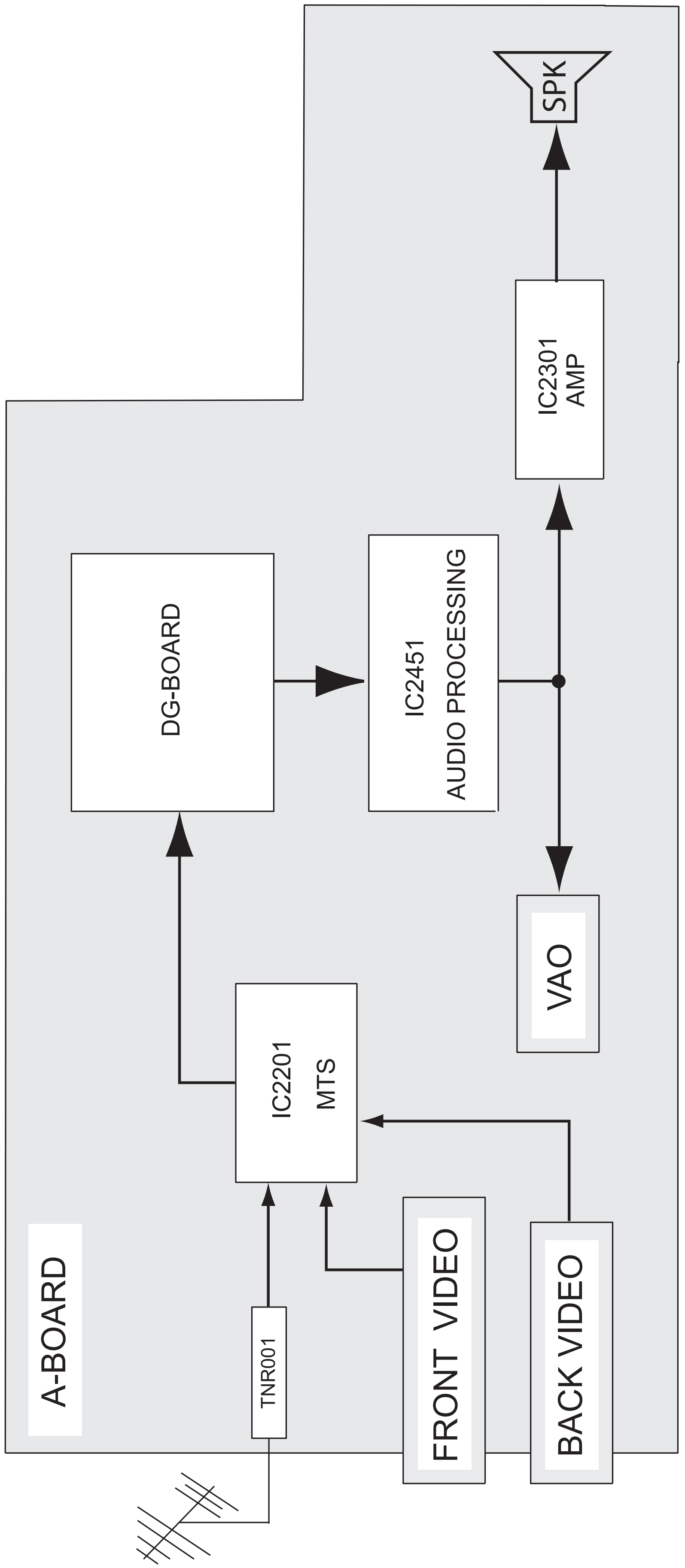
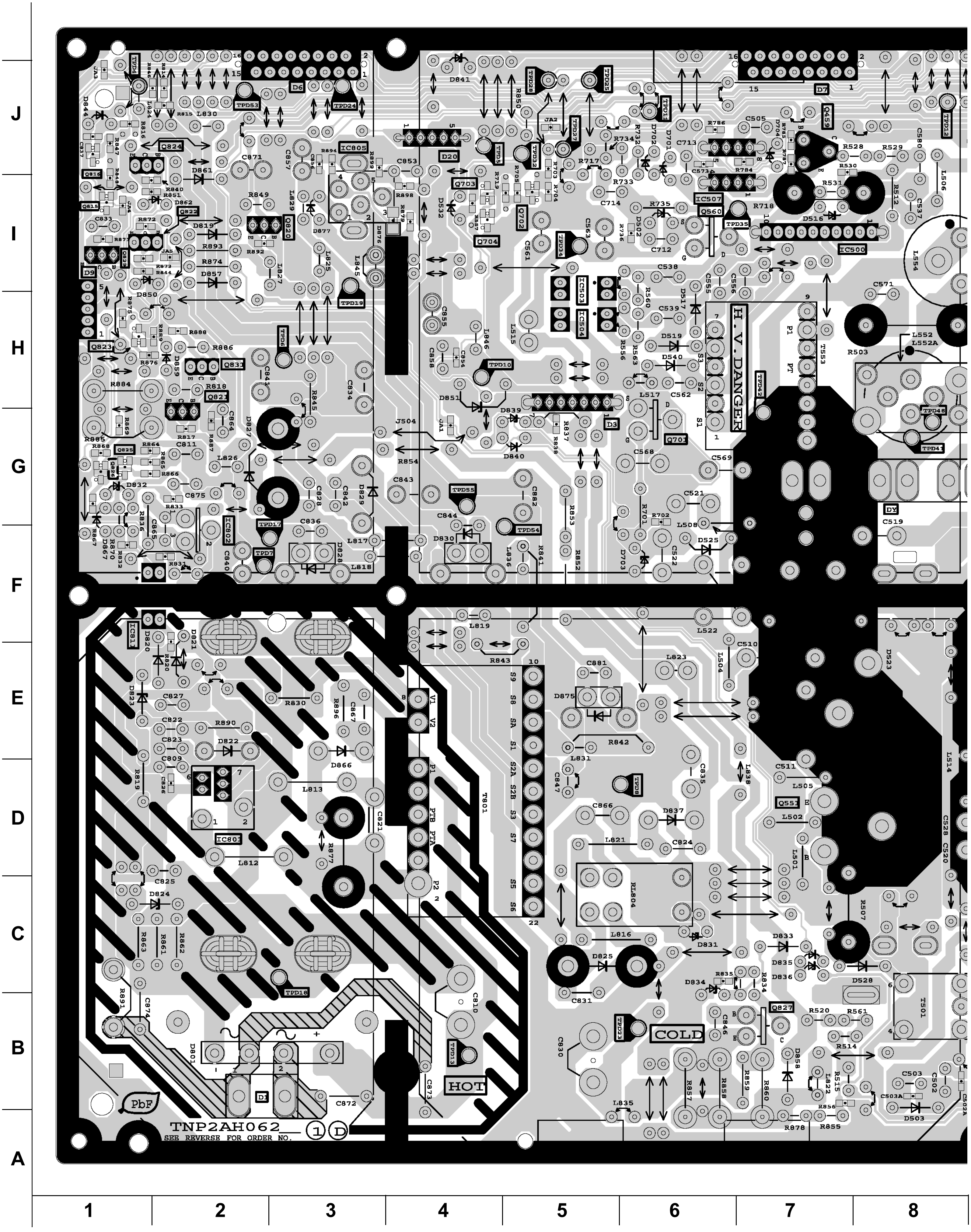

A-BOARD
TNR001
FRONT VIDEO
BACK VIDEO
IC2201
MTS
DG-BOARD
IC2451
AUDIO PROCESSING
VAO
IC2301
AMP
SPK

AUDIO BLOCK DIAGRAM   CT-32HL44J/UJ



J
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H.V.DANGER
COLD
HOT
PbF
TNP2AH062
1
D
SEE REVERSE FOR ORDER NO.
D6
D7
D20
D3
D9
DY
IC805
IC507
IC500
IC503
IC504
IC802
IC801
IC811
Q824
Q816
Q815
Q822
Q820
Q823
Q831
Q821
Q825
Q703
Q702
Q704
Q560
Q459
Q701
Q551
Q827
T801
T553
T501
RL804
J504
L830
L829
L825
L827
L845
L846
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L552A
L554
L506
L826
L817
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R816
R840
R851
R849
R893
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R850
R734
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R733
R735
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R890
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R835
R834
R857
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R878
R855
R856
R515
R514
R520
R561
R507
C871
C857
C853
C714
C712
C713
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C573
C580
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C810
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C831
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C503
C502
C503A
D844
D861
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D532
D877
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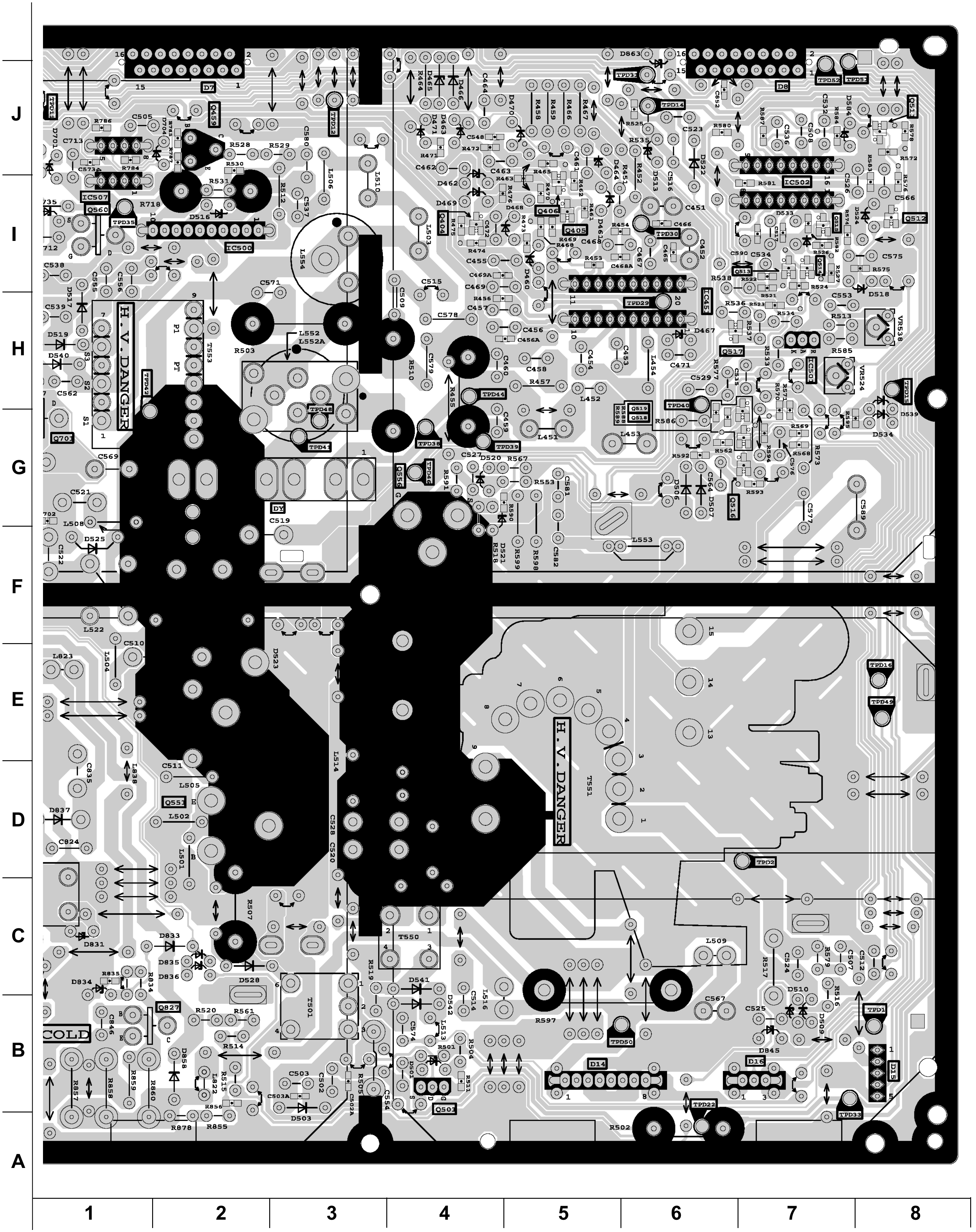
D503
D523
TPD53
TPD24
TPD19
TPD6
TPD17
TPD7
TPD28
TPD25
TPD11
TPD27
TPD5
TPD32
TPD34
TPD35
TPD10
TPD55
TPD54
TPD42
TPD48
TPD41
TPD12
TPD18
TPD13
TPD23
JA1
JA2
JA3
JA4
JA5
P1
PT
S1
S2
S3
V1
V2
P2
PTB
PTA
S9
S8
SA
S2A
S2B
S7
S5
S6



J
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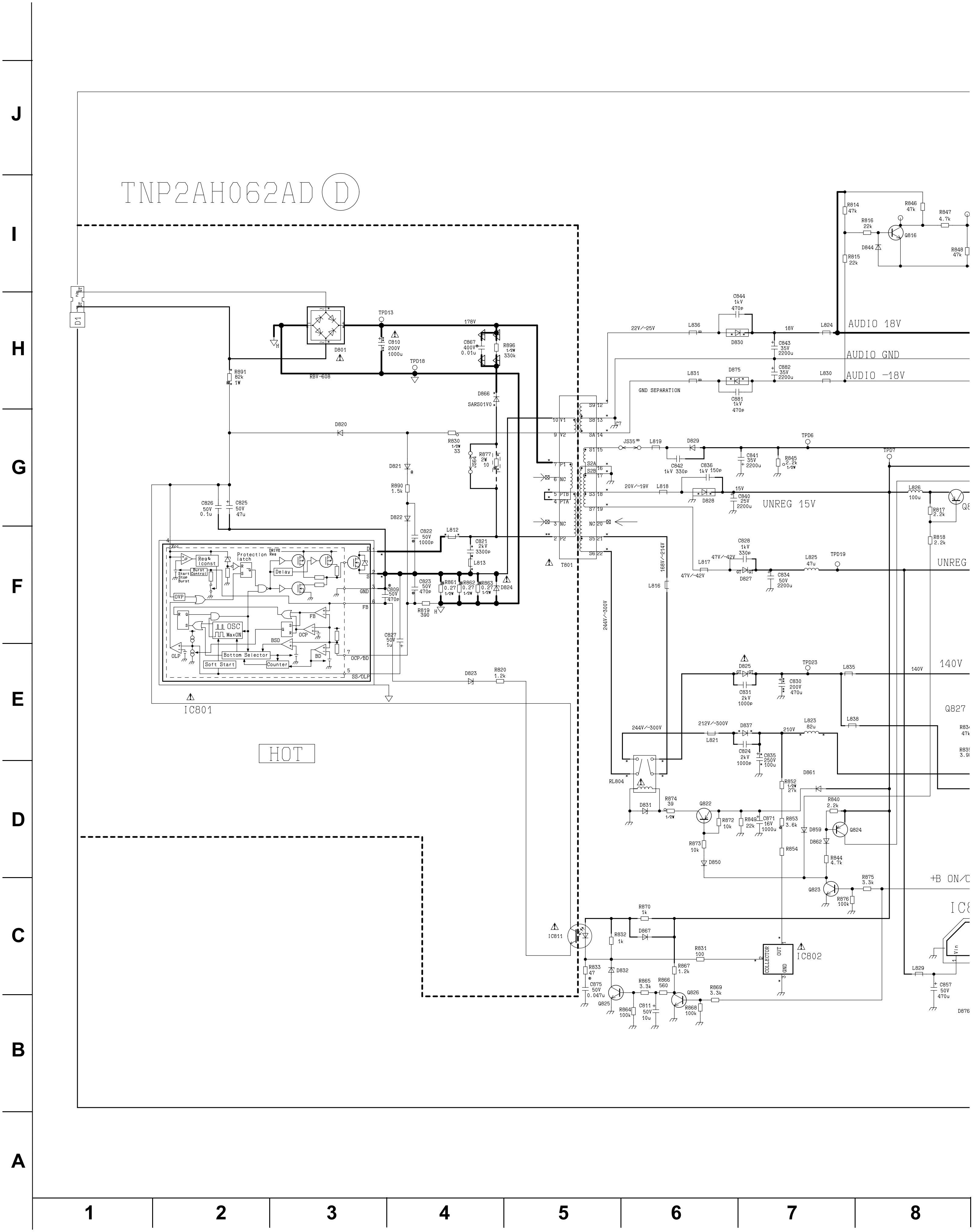
H.V.DANGER
H.V.DANGER
COLD
IC500
IC502
IC507
IC45
IC501
T550
T551
T553
T501
D7
D8
D14
D15
D16
DY
L552
L552A
L554
Q551
Q501
Q827
Q701
Q560
TPD48

D-BOARD 2/2 TNP2AH062 CT-32HL44J/UJ



TNP2AH062AD
D
HOT
IC801
IC811
IC802
T801
RL804
D801
RBV-608
AUDIO 18V
AUDIO GND
AUDIO -18V
GND SEPARATION
UNREG 15V
UNREG
140V
+B ON/C
Q827
Q816
Q822
Q823
Q824
Q825
Q826
Protection latch
Reg& Iconst
Burst Control
Delay
OVP
OLP
OSC
MaxON
Bottom Selector
Soft Start
Counter
OCP
BSD
BD
FB
GND
OCP/BD
SS/OLP
COLLECTOR
OUT
GND
178V
22V/~25V
18V
20V/~19V
15V
47V/~42V
168V/~214V
244V/~300V
212V/~300V
210V
TPD13
TPD18
TPD6
TPD7
TPD19
TPD23
J
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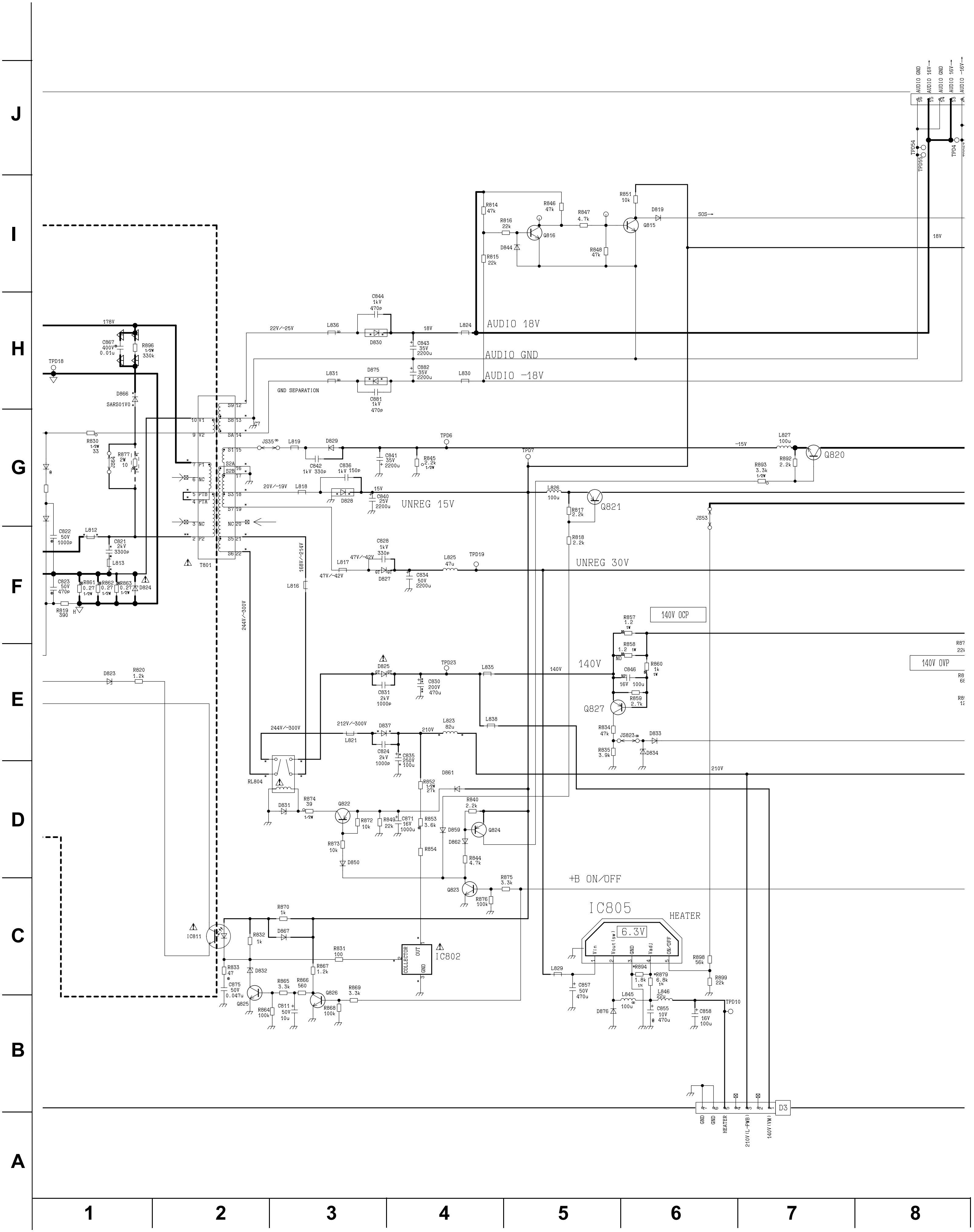
J
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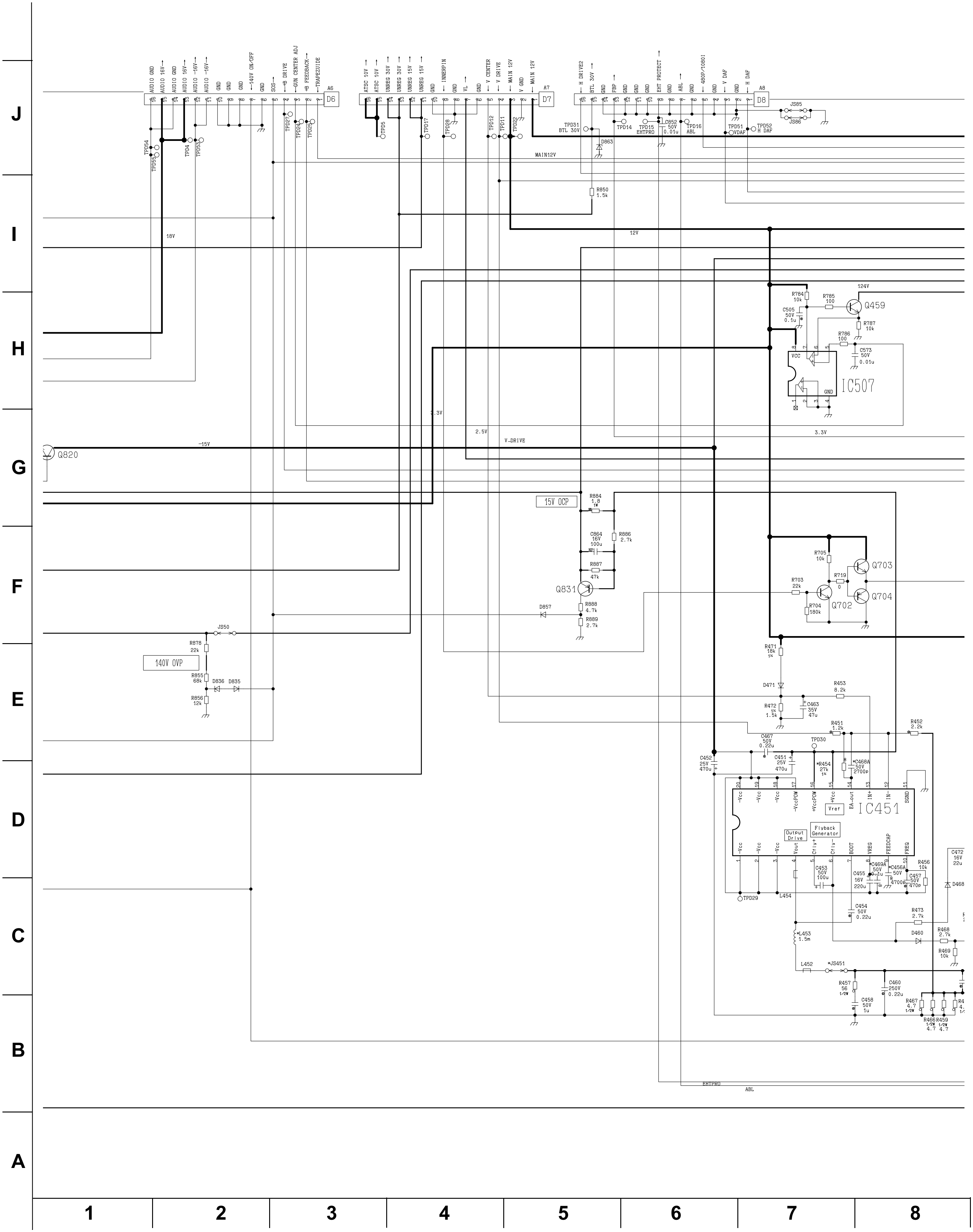
8
AUDIO GND
AUDIO 16V→
AUDIO GND
AUDIO 16V→
AUDIO -16V→
TPD54
TPD55
TPD4
R851 10k
D819
SOS→
Q815
18V
R814 47k
R846 47k
R847 4.7k
R816 22k
Q816
D844
R848 47k
R815 22k
C844 1kV 470p
L836
22V/-25V
18V
L824
AUDIO 18V
D830
C843 35V 2200u
AUDIO GND
L831
D875
C882 35V 2200u
L830
AUDIO -18V
GND SEPARATION
C881 1kV 470p
176V
C867 400V 0.01u
R896 1/2W 330k
TPD18
D866
SARS01V0
T801
R830 1/2W 33
R877 2W 10
JS64
JS35
L819
D829
TPD6
TPD7
-15V
L827 100u
Q820
C842 1kV 330p
C836 1kV 150p
C841 35V 2200u
R845 2.2k 1/2W
R893 3.3k 1/2W
R892 2.2k
20V/-19V
L818
15V
D828
C840 25V 2200u
UNREG 15V
L826 100u
Q821
R817 2.2k
R818 2.2k
JS53
C822 50V 1000p
L812
C821 2kV 3300p
L813
C828 1kV 330p
47V/-42V
L817
D827
C834 50V 2200u
L825 47u
TPD19
UNREG 30V
168V/-214V
L816
C823 50V 470p
R861 0.27 1/2W
R862 0.27 1/2W
R863 0.27 1/2W
D824
R819 390
244V/-300V
R857 1.2 1W
140V OCP
R858 1.2 1W
R860 1k 1W
140V OVP
D823
R820 1.2k
D825
TPD23
L835
140V
C830 200V 470u
C831 2kV 1000p
C846 16V 100u
R859 2.7k
Q827
244V/-300V
212V/-300V
D837
210V
L823 82u
L838
L821
C824 2kV 1000p
C835 250V 100u
R834 47k
JS823
D833
R835 3.9k
D834
RL804
210V
R852 1/2W 27k
D861
D831
R874 39 1/2W
Q822
R872 10k
R849 22k
C871 16V 1000u
R853 3.6k
R840 2.2k
D859
Q824
D862
R873 10k
D850
R854
R844 4.7k
+B ON/OFF
Q823
R875 3.3k
R876 100k
IC811
R870 1k
D867
R832 1k
R831 100
COLLECTOR
OUT
GND
IC802
IC805
HEATER
6.3V
Vin
Vout(sw)
GND
Vadj
ON/OFF
R898 56k
R899 22k
R833 47
D832
R867 1.2k
R865 3.3k
R866 560
R869 3.3k
C875 50V 0.047u
Q825
R864 100k
C811 50V 10u
Q826
R868 100k
L829
C857 50V 470u
R894 1.8k
R879 6.8k
L845 100u
L846 22u
C855 10V 470u
C858 16V 100u
TPD10
D876
D3
GND
GND
HEATER
210V(L-PWB)
140V(VM)


J
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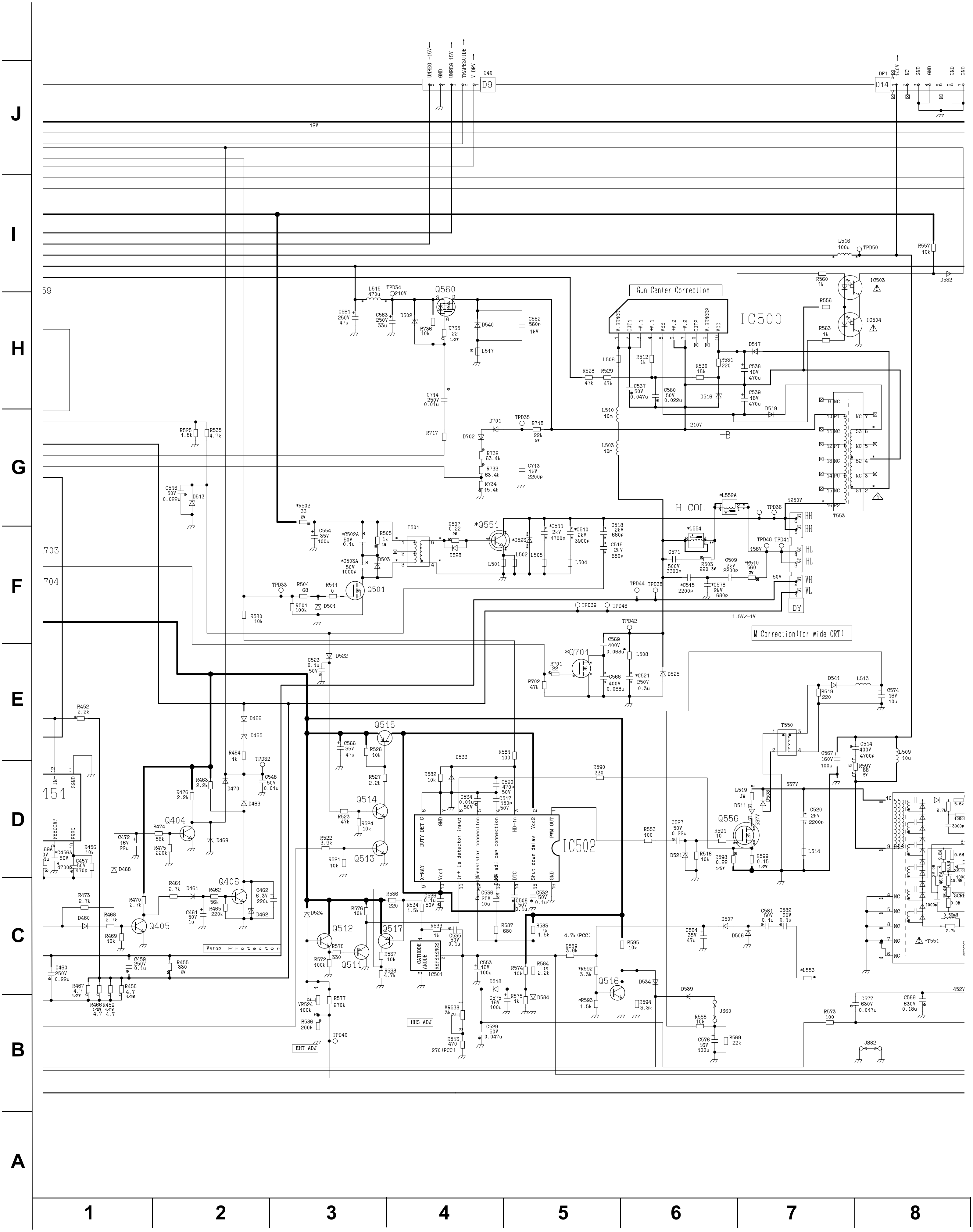
A6
D6
AUDIO GND
AUDIO 16V
AUDIO GND
AUDIO 16V
AUDIO -16V
AUDIO -16V
GND
GND
GND
140V ON/OFF
GND
SOS
B DRIVE
GUN CENTER ADJ
B FEEDBACK
TRAPEZUIDE
TPD54
TPD55
TPD4
TPD53
TPD27
TPD24
TPD25
A7
D7
ATSC 10V
ATSC 10V
UNREG 30V
UNREG 30V
UNREG 15V
UNREG 15V
GND
INNERPIN
GND
VL
GND
V CENTER
V DRIVE
MAIN 12V
V GND
MAIN 12V
TPD5
TPD17
TPD28
TPD12
TPD11
TPD22
A8
D8
H DRIVE2
BTL 30V
GND
FBP
GND
GND
GND
EHT PROTECT
GND
ABL
GND
480P/1080I
GND
V DAF
GND
H DAF
JS85
JS86
TPD31
BTL 30V
D863
TPD14
TPD15
EHTPRO
C852
50V
0.01u
TPD16
ABL
TPD51
VDAF
TPD52
H DAF
MAIN12V
R850
1.5k
18V
12V
124V
R784
10k
R785
100
Q459
C505
50V
0.1u
R787
10k
R786
100
C573
50V
0.01u
VCC
GND
IC507
3.3V
2.5V
V-DRIVE
-15V
Q820
3.3V
15V OCP
R884
1.8
1W
C864
16V
100u
NP
R886
2.7k
R887
47k
Q831
D857
R888
4.7k
R889
2.7k
R705
10k
Q703
R719
0
R703
22k
Q702
Q704
R704
180k
JS50
R878
22k
140V OVP
R855
68k
D836
D835
R856
12k
R471
18k
1%
D471
R453
8.2k
R472
1%
1.5k
C463
35V
47u
R451
1.2k
R452
2.2k
C467
50V
0.22u
TPD30
C452
25V
470u
C451
25V
470u
R454
27k
1%
C468A
50V
2700p
-Vcc
-Vcc
-Vcc
-VccPOW
+VccPOW
+Vcc
EA-out
IN+
IN-
SGND
Vref
IC451
Output Drive
Flyback Generator
-Vcc
-Vcc
-Vcc
Vout
Cflv+
Cflv-
BOOT
VREG
FEEDCAP
FREQ
C472
16V
22u
R456
10k
C453
50V
100u
C469A
50V
1u
C456A
50V
4700p
C457
50V
470p
C455
16V
220u
D468
TPD29
L454
C454
50V
0.22u
R473
2.7k
L453
1.5m
D460
R468
2.7k
R469
10k
L452
JS451
R457
56
1/2W
C460
250V
0.22u
C458
50V
1u
R467
4.7
1/2W
R466
1/2W
4.7
R459
1/2W
4.7
EHTPRO
ABL

D-BOARD 3/5 TNP2AH062AD CT-32HL44J/UJ

J
I
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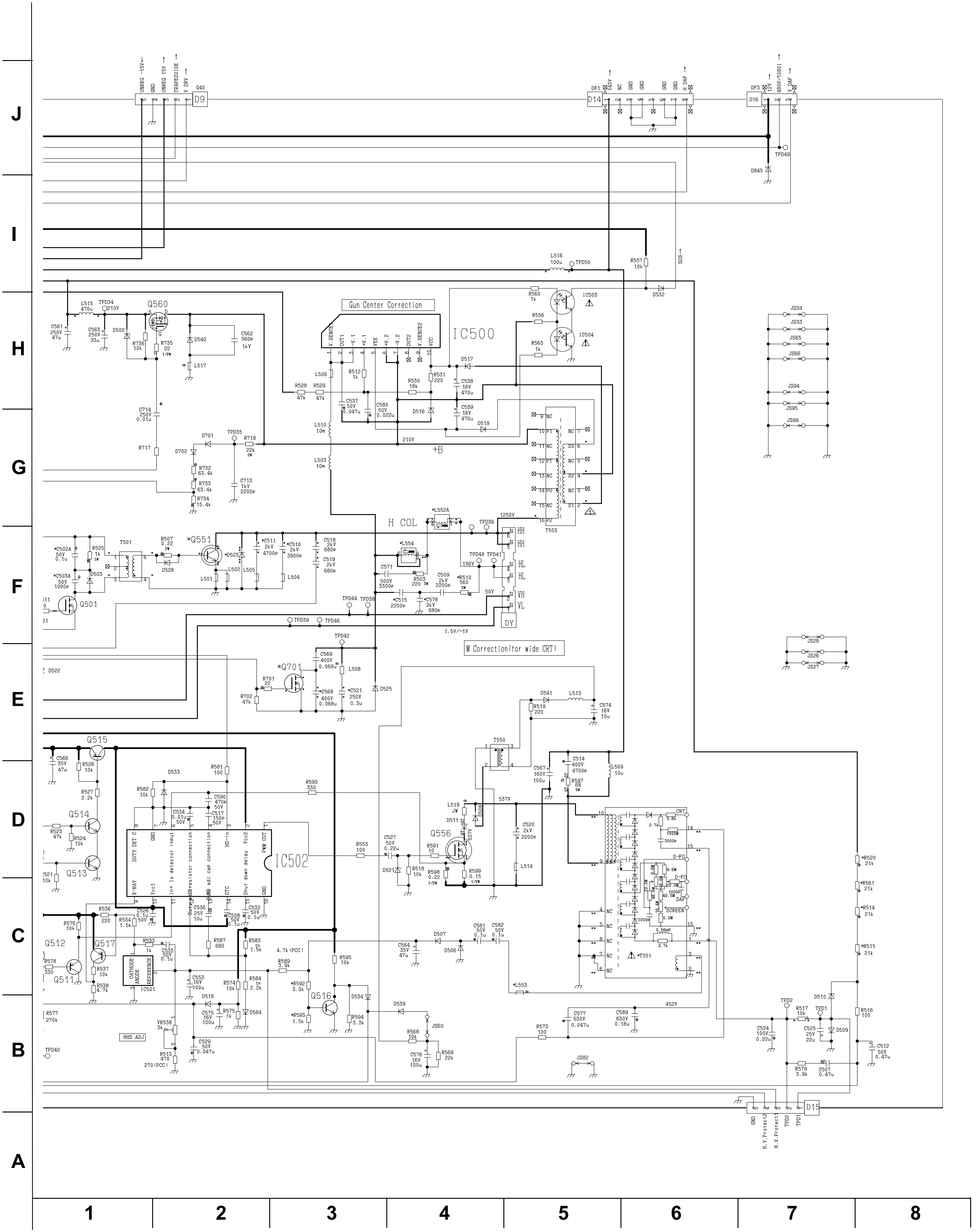
UNREG -15V
GND
UNREG 15V
TRAPEZUIDE
V DRV
G40
D9
DF1
D14
140V
NC
GND
12V
L516 100u
TPD50
R557 10k
D532
R560 1k
IC503
R556
IC504
R563 1k
Gun Center Correction
IC500
V.SENCE1
OUT1
-V.1
+V.1
VEE
+V.2
-V.2
OUT2
V.SENCE2
VCC
L515 470u
TPD34
210V
Q560
C561 250V 47u
C563 250V 33u
D502
R736 10k
R735 22 1/2W
D540
C562 560p 1kV
L517
L506
R512 1k
R528 47k
R529 47k
C537 50V 0.047u
C580 50V 0.022u
R530 18k
R531 220
C538 16V 470u
D517
D516
C539 16V 470u
D519
L510 10m
C714 250V 0.01u
R717
D701
TPD35
R718 22k 2W
D702
R732 63.4k
R733 63.4k
R734 15.4k
C713 1kV 2200p
210V
+B
L503 10m
T553
R525 1.8k
R535 4.7k
C516 50V 0.022u
D513
*R502 33 2W
C554 35V 100u
*C502A 50V 0.1u
R505 1k 1W
T501
R507 0.22 2W
*Q551
*D523
*C511 2kV 4700p
*C510 2kV 3900p
C518 2kV 680p
C519 2kV 680p
H COL
*L552A
TPD36
1250V
HH
HL
VH
VL
DY
*L554
TPD48
TPD41
156V
C571 500V 3300p
R503 220 3W
C509 2kV 2200p
*R510 560 3W
50V
*C515 2200p
*C578 2kV 680p
TPD44
TPD38
*C503A 50V 1000p
D503
D528
L501
L502
L505
L504
TPD33
R504 68
R511 0
Q501
R501 100k
D501
R580 10k
TPD39
TPD46
1.5V/-1V
M Correction(for wide CRT)
TPD42
C569 400V 0.068u
L508
*Q701
R701 22
R702 47k
*C568 400V 0.068u
*C521 250V 0.3u
D525
C523 0.1u 50V
D522
D541
L513
R519 220
C574 16V 10u
T550
C567 160V 100u
C514 400V 4700p
R597 68 5W
L509 10u
537V
R452 2.2k
D466
D465
R464 1k
TPD32
C548 50V 0.01u
Q515
C566 35V 47u
R526 10k
R527 2.2k
R581 100
D533
R582 10k
C590 470p 50V
C534 0.01u 50V
C517 150p 50V
R590 330
451
SGND
IN-
FEEDCAP
FREQ
R463 2.2k
R476 2.2k
D470
D463
Q404
D469
R474 56k
R475 220k
C472 16V 22u
Q514
R523 47k
R524 10k
R522 3.9k
Q513
R521 10k
IC502
DUTY DET C
GND
In+ Is detector input
Duty DN resistor connection
HHS adj cap connection
HD-in
Vcc2
PWM OUT
X-RAY
Vcc1
DTC
Shut down delay
R553 100
C527 50V 0.22u
D521
R518 10k
R591 10
Q556
R598 0.22 1/2W
R599 0.15 1/2W
L519 JW
D511
D508
C520 2kV 2200p
L514
D468
C456A 50V 4700p
C457 50V 470p
R456 10k
R473 2.7k
D460
R470 2.7k
R461 2.7k
D461
R462 56k
Q406
C462 6.3V 220u
C461 50V 1u
R465 220k
D462
R468 2.7k
R469 10k
Q405
Vstop Protector
C460 250V 0.22u
C459 250V 0.1u
R455 330 2W
R467 4.7 1/2W
R466 4.7 1/2W
R459 4.7 1/2W
R458 4.7 1/2W
D524
Q512
R576 10k
R536 220
R534 1.5k
C526 0.1u 50V
C536 25V 10u
C508 50V 0.1u
C532 50V 0.1u
R587 680
R583 1.5k
4.7k(PCC)
R589 3.9k
Q517
R537 10k
R538 4.7k
R578 330
Q511
R572 100k
R533 1k
C535 50V 0.1u
CATHODE
ANODE
REFERENCE
IC501
C553 16V 100u
D518
R574 10k
R584 2.2k
C575 16V 100u
R575 1k
D584
*R592 3.3k
*R593 1.5k
Q516
R595 10k
D534
R594 3.3k
C564 35V 47u
D507
D506
C581 50V 0.1u
C582 50V 0.1u
D539
JS60
R568 10k
C576 16V 100u
R569 22k
R573 100
C577 630V 0.047u
C589 630V 0.18u
JS82
*L553
*T551
452V
VR524 100k
R577 270k
R586 200k
TPD40
EHT ADJ
VR538 3k
HHS ADJ
R513 470
270(PCC)
C529 50V 0.047u



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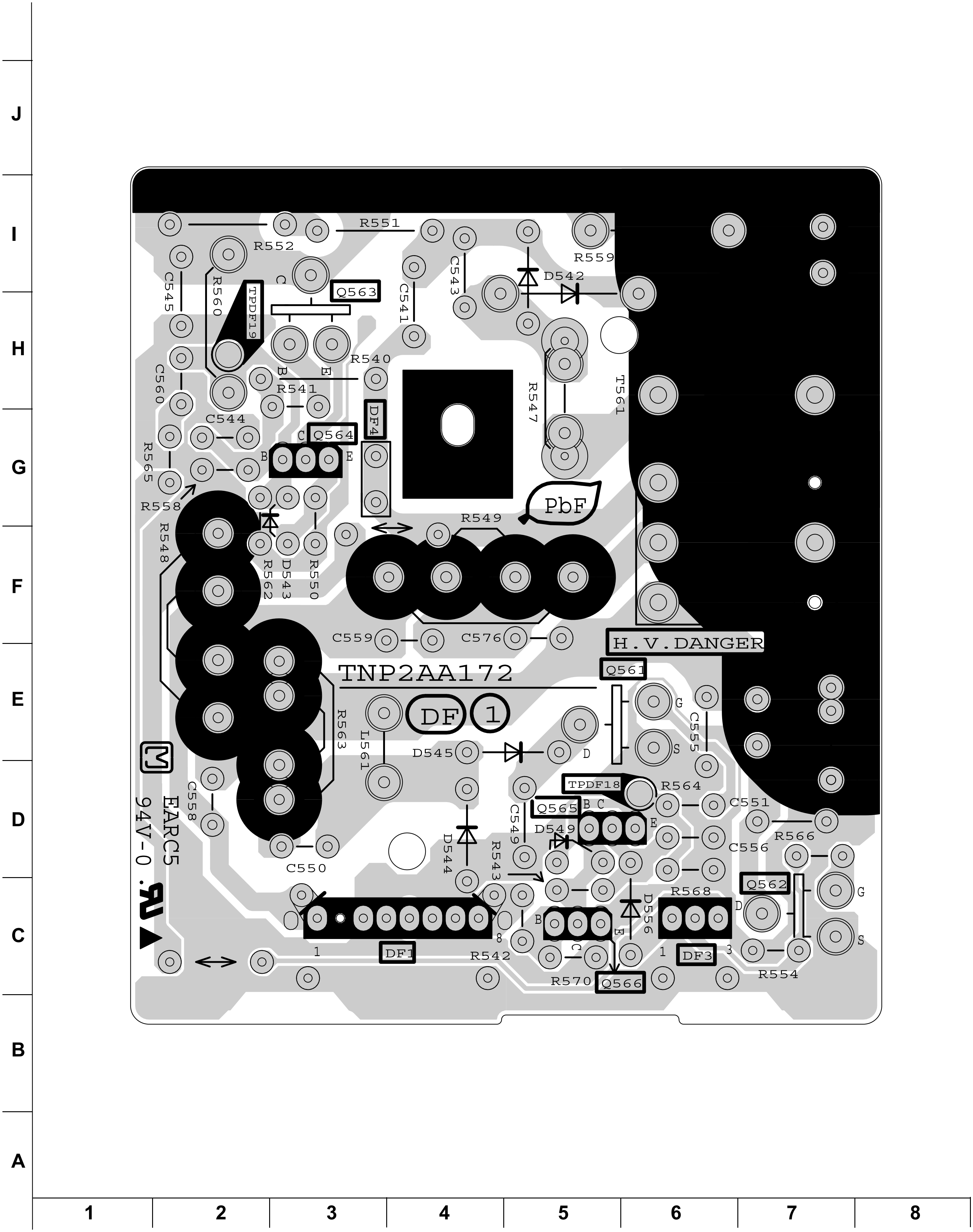
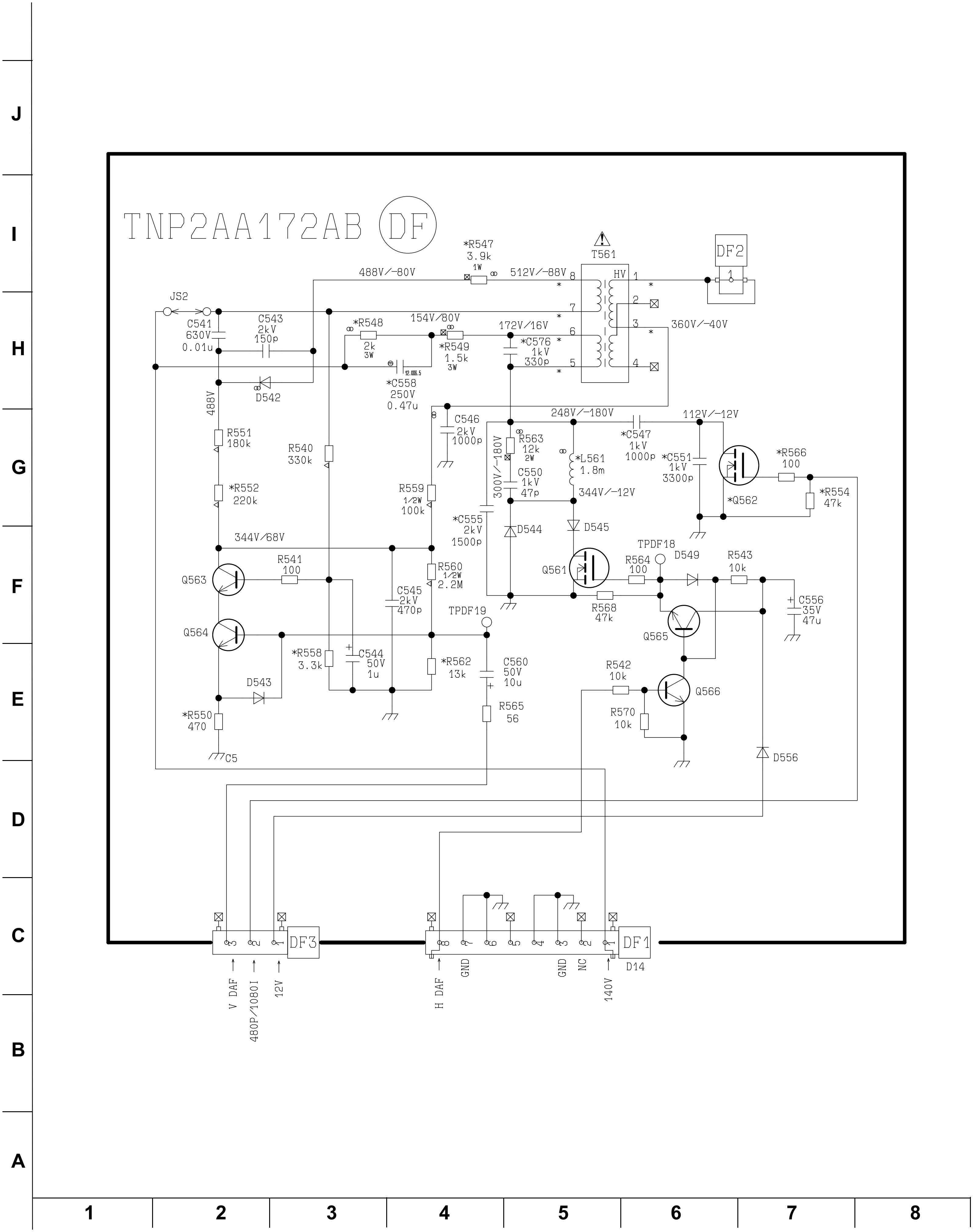
G40
D9
UNREG -15V
GND
UNREG 15V
TRAPEZOIDE
V DRV
DF1
D14
140V
NC
GND
H DAF
DF3
D16
12V
480P/1080I
V DAF
TPD49
D845
L516
100u
TPD50
R557
10k
SOS
D532
Gun Center Correction
IC500
V.SENCE1
OUT1
-V.1
+V.1
VEE
+V.2
-V.2
OUT2
V.SENCE2
VCC
IC503
IC504
R560
1k
R556
R563
1k
D517
L515
470u
TPD34
210V
Q560
C561
250V
47u
C563
250V
33u
D502
R736
10k
R735
22
1/2W
D540
C562
560p
1kV
L517
C714
250V
0.01u
R717
L506
R512
1k
R531
220
C538
16V
470u
R528
47k
R529
47k
R530
18k
C537
50V
0.047u
C580
50V
0.022u
D516
C539
16V
470u
D519
L510
10m
L503
10m
210V
+B
D701
TPD35
R718
22k
2W
D702
R732
63.4k
R733
63.4k
R734
15.4k
C713
1kV
2200p
T553
1250V
H COL
L552A
TPD36
HH
HL
VH
VL
DY
T501
R507
0.22
2W
*Q551
D523
C511
2kV
4700p
C510
2kV
3900p
C518
2kV
680p
C519
2kV
680p
*C502A
50V
0.1u
R505
1k
1W
*C503A
50V
1000p
D503
D528
L501
L502
L505
L504
Q501
L554
C571
500V
3300p
R503
220
3W
C509
2kV
2200p
R510
560
3W
TPD48
TPD41
156V
50V
TPD44
TPD38
C515
2200p
C578
2kV
680p
TPD39
TPD46
1.5V/-1V
M Correction(for wide CRT)
TPD42
C569
400V
0.068u
L508
*Q701
R701
22
R702
47k
C568
400V
0.068u
C521
250V
0.3u
D525
D522
JS34
JS33
JS65
JS66
JS94
JS95
JS99
JS28
JS26
JS27
D541
L513
R519
220
C574
16V
10u
T550
C567
160V
100u
C514
400V
4700p
R597
68
5W
L509
10u
Q515
C566
35V
47u
R526
10k
R527
2.2k
Q514
R523
47k
R524
10k
Q513
R521
10k
D533
R581
100
R582
10k
R590
330
C534
0.01u
50V
C590
470p
50V
C517
150p
50V
IC502
DUTY DET C
GND
In+ Is detector input
resistor connection
adj cap connection
HD-in
Vcc2
PWM OUT
X-RAY
Vcc1
DTC
Shut down delay
R553
100
C527
50V
0.22u
R591
10
Q556
L519
JW
D511
D508
537V
C520
2kV
2200p
L514
D521
R518
10k
R598
0.22
1/2W
R599
0.15
1/2W
CRT
5.6k
2.7k
1000M
3000p
S-FO
D-FO
DAF
SCREEN
1000p
0.56mH
*T551
R536
220
C526
0.1u
50V
C536
25V
10u
C532
50V
0.1u
C508
50V
0.1u
R576
10k
R534
1.5k
Q512
Q517
R533
1k
C535
50V
0.1u
R578
330
Q511
R537
10k
R538
4.7k
IC501
CATHODE
ANODE
REFERENCE
R587
680
R583
1.5k
4.7k(PCC)
R589
3.9k
R595
10k
C553
16V
100u
R574
10k
R584
2.2k
*R592
3.3k
Q516
D534
D507
C581
50V
0.1u
C582
50V
0.1u
C564
35V
47u
D506
*L553
D518
C575
16V
100u
R575
1k
D584
*R593
1.5k
R594
3.3k
D539
JS60
R568
10k
C576
16V
100u
R569
22k
R577
270k
VR538
3k
HHS ADJ
C529
50V
0.047u
R513
470
270(PCC)
TPD40
R573
100
C577
630V
0.047u
C589
630V
0.18u
452V
JS82
*R520
21k
*R561
21k
*R514
21k
*R515
21k
R516
100
D510
TPD2
R517
10k
TPD1
D509
C524
100V
0.22u
C525
25V
22u
C512
50V
0.47u
R579
3.9k
C507
0.47u
NP
D15
GND
H.V.Protect2
H.V.Protect1
TPD2
TPD1


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
R551
R552
R559
C545
R560
TPDF19
C
Q563
C541
C543
D542
B
E
R540
R541
C560
T561
R547
C544
R565
C
Q564
B
E
DF4
R558
PbF
R549
R548
R562
D543
R550
C559
C576
H.V.DANGER
TNP2AA172
Q561
G
S
D
C555
DF
1
R563
L561
D545
TPDF18
R564
C551
Q565
B C
E
C549
D549
C558
EARC5
94V-0
D544
R543
C556
R566
C550
D556
R568
Q562
G
D
S
B
C
E
8
1
DF1
R542
1
DF3
3
R554
R570
Q566


TNP2AA172AB
DF
*R547
3.9k
1W
T561
DF2
488V/-80V
512V/-88V
HV
JS2
C543
2kV
150p
C541
630V
0.01u
*R548
2k
3W
154V/80V
*R549
1.5k
3W
172V/16V
*C576
1kV
330p
360V/-40V
*C558
250V
0.47u
D542
488V
C546
2kV
1000p
248V/-180V
*C547
1kV
1000p
112V/-12V
R551
180k
R540
330k
R563
12k
2W
*L561
1.8m
*C551
1kV
3300p
*R566
100
C550
1kV
47p
300V/-180V
*R552
220k
R559
1/2W
100k
344V/-12V
*Q562
*R554
47k
*C555
2kV
1500p
D544
D545
344V/68V
TPDF18
Q563
R541
100
R560
1/2W
2.2M
Q561
R564
100
D549
R543
10k
C545
2kV
470p
R568
47k
C556
35V
47u
Q564
TPDF19
Q565
*R558
3.3k
C544
50V
1u
*R562
13k
C560
50V
10u
R542
10k
D543
Q566
*R550
470
C5
R565
56
R570
10k
D556
DF3
V DAF
480P/1080I
12V
H DAF
GND
GND
NC
140V
DF1
D14
J
I
H
G
F
E
D
C
B
A
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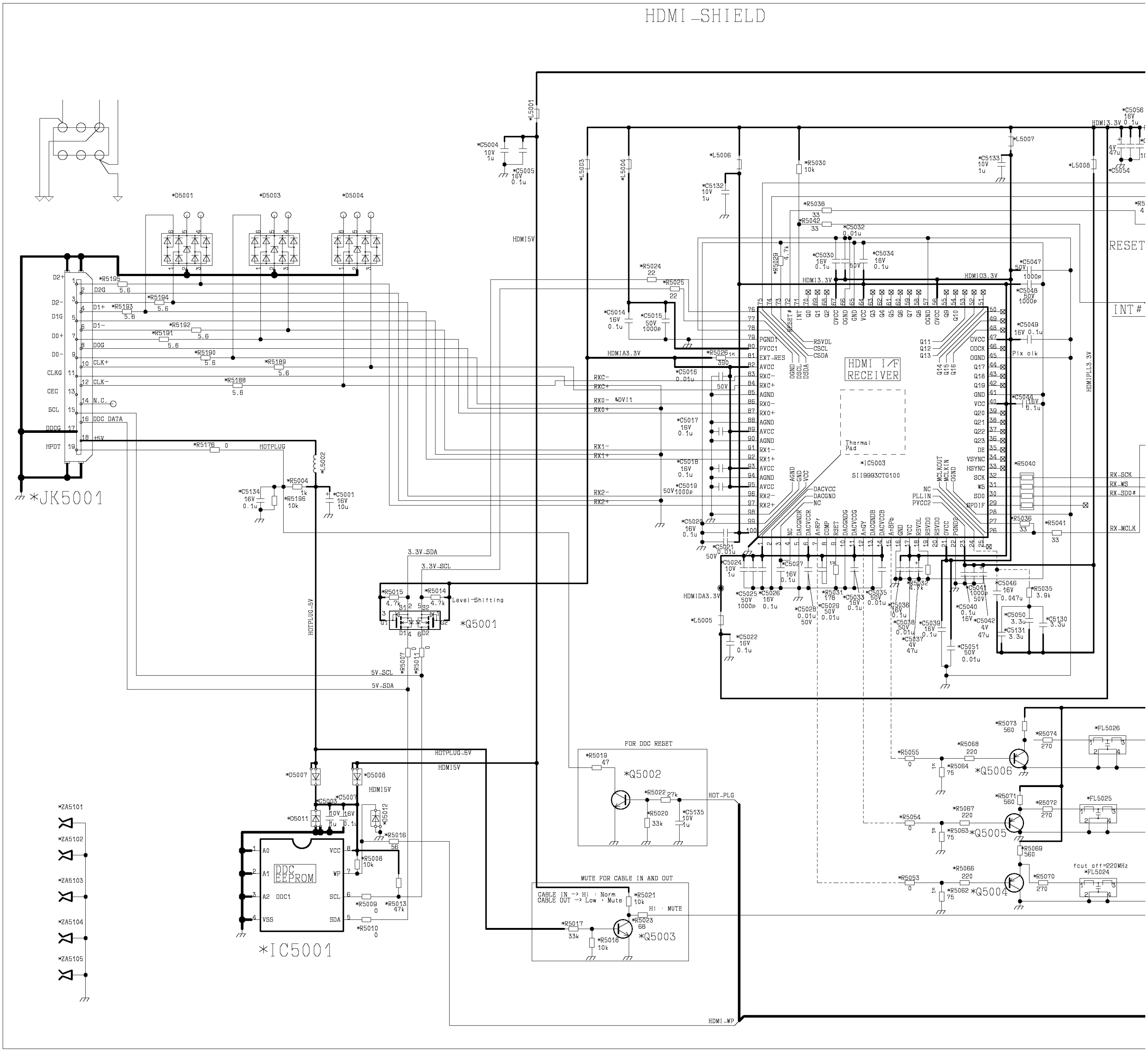
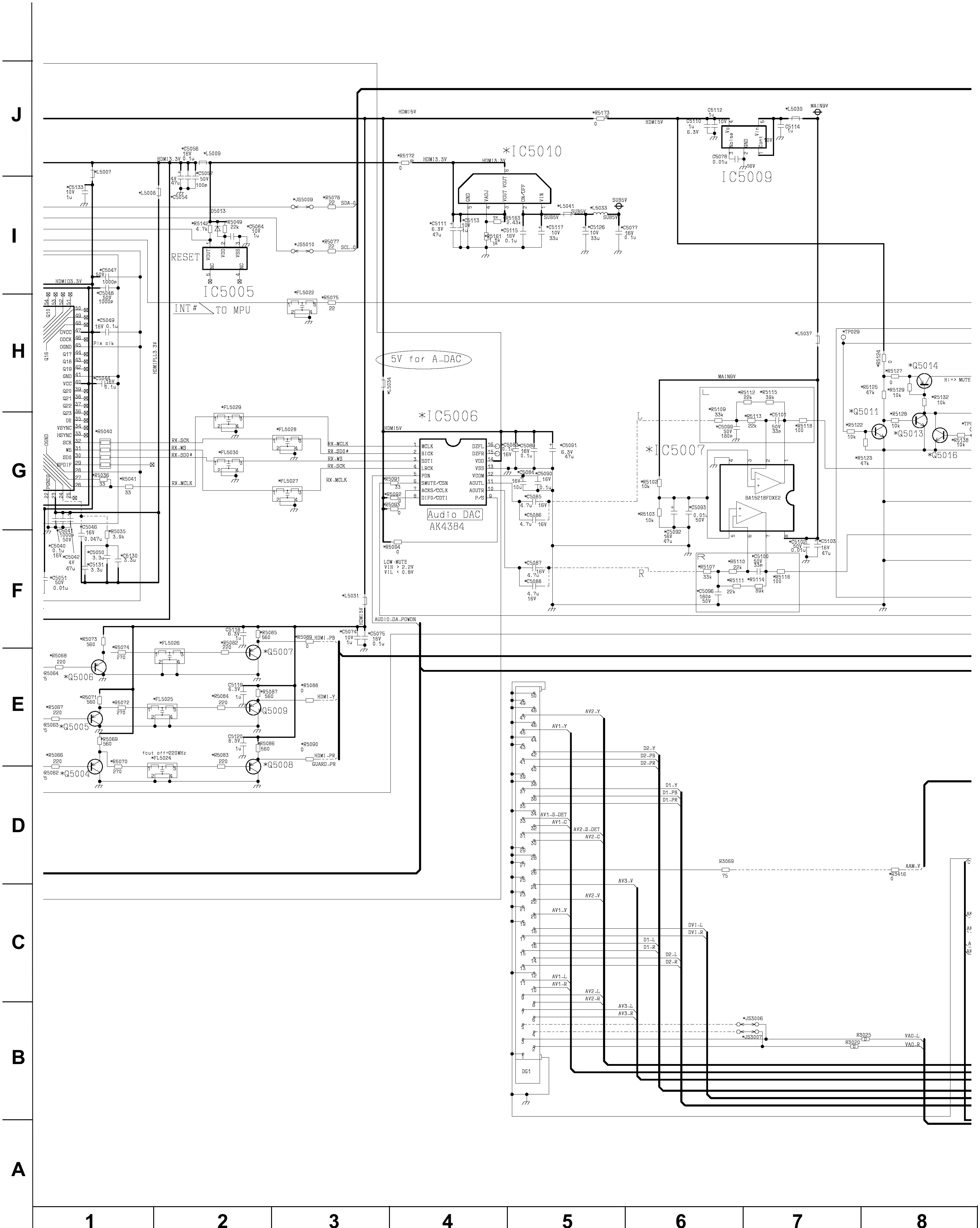
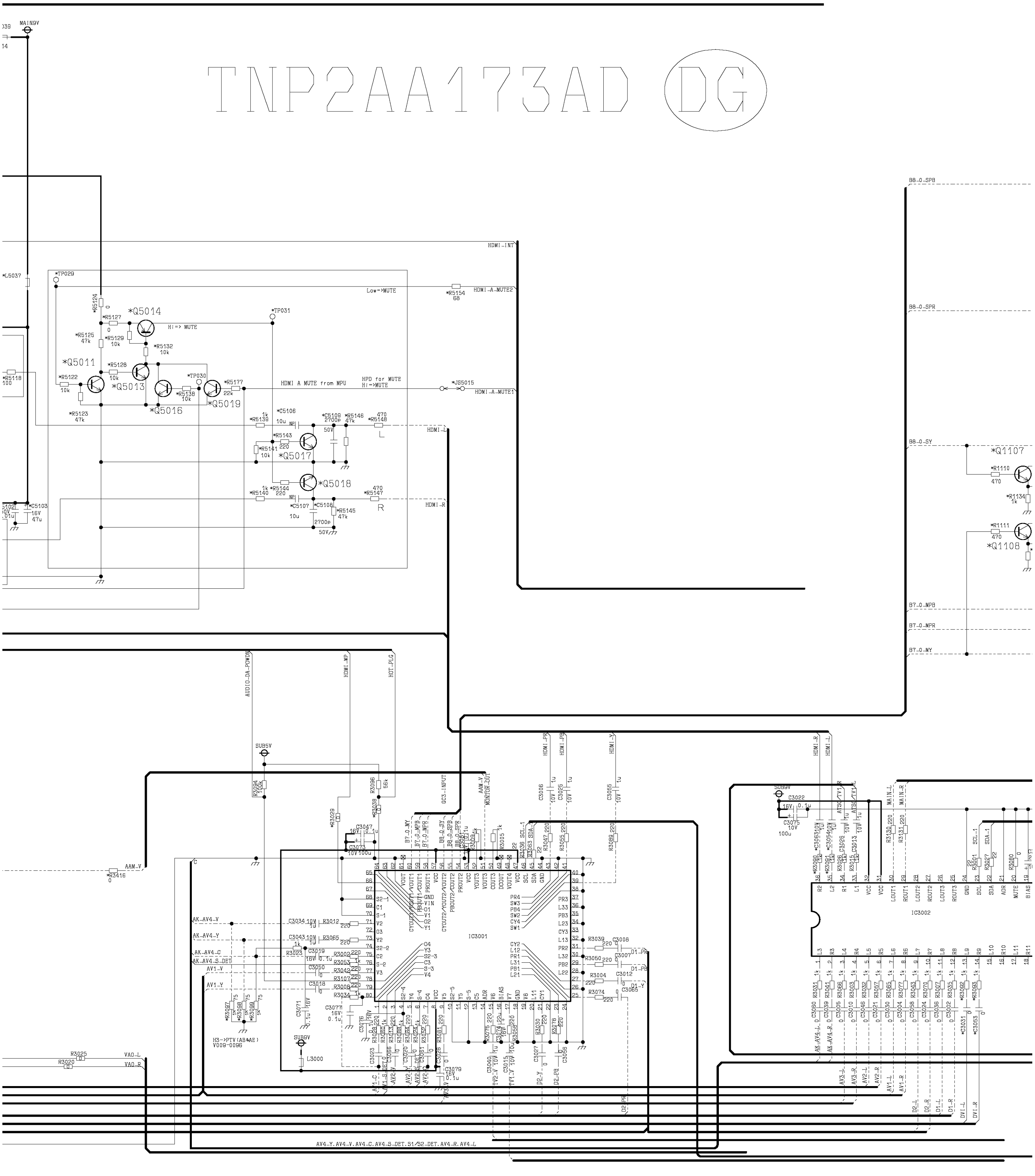
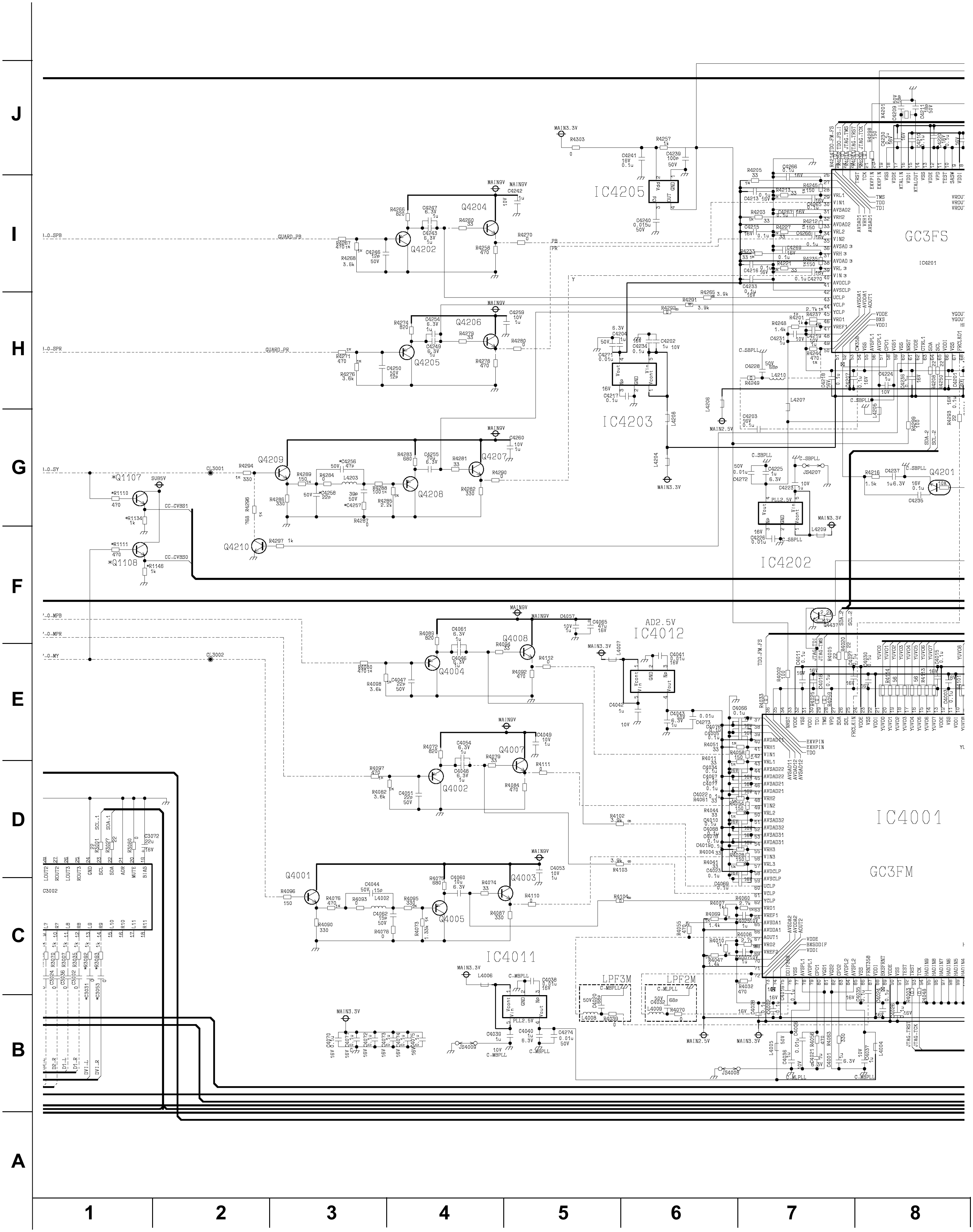
7
8

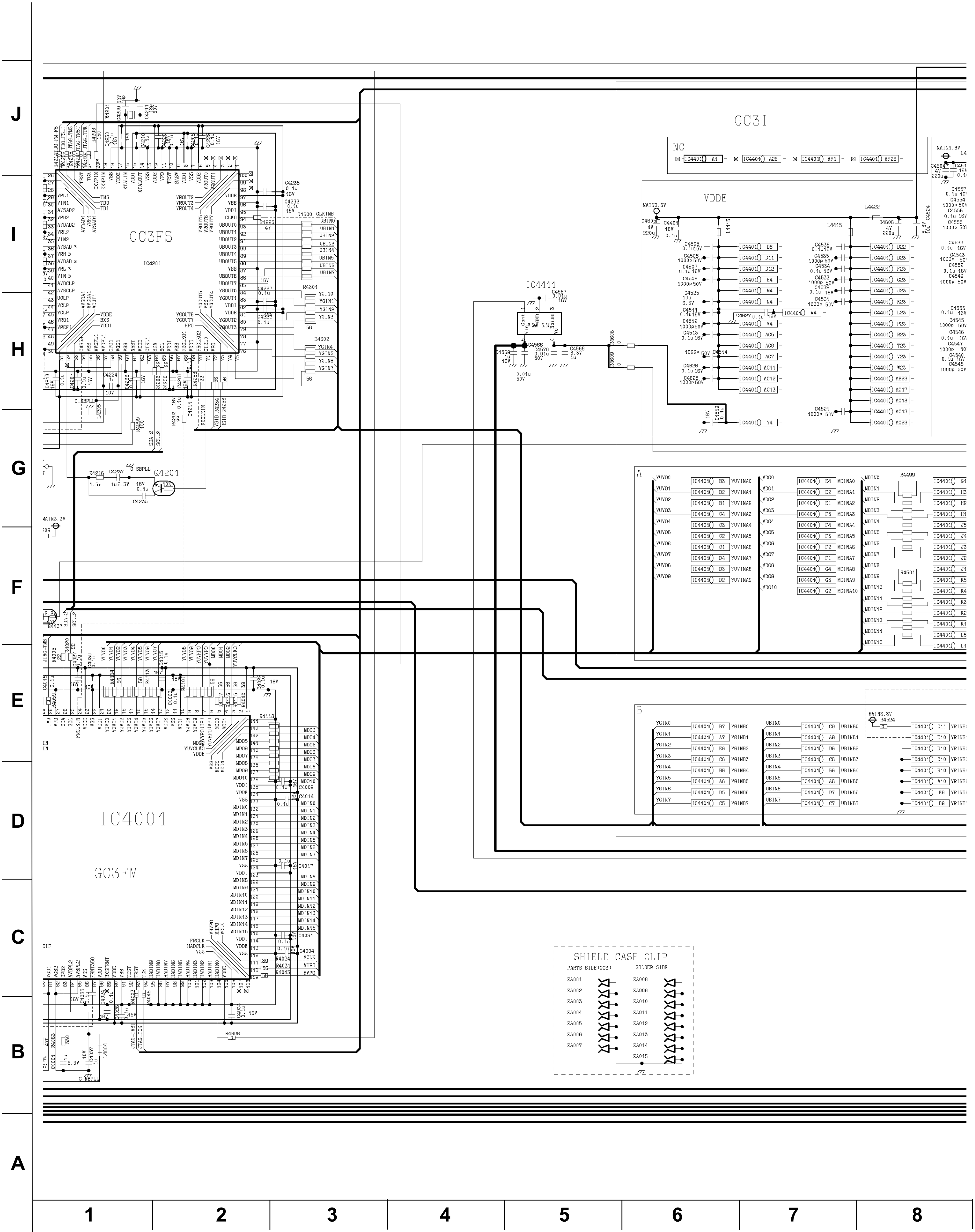

HDMI_SHIELD
*JK5001
D2+
D2-
D1G
D0+
D0-
CLKG
CEC
SCL
DDCG
HPDT
*D5001
*D5003
*D5004
*R5195 5.6
*R5194 5.6
*R5193 5.6
*R5192 5.6
*R5191 5.6
*R5190 5.6
*R5189 5.6
*R5188 5.6
*R5176 0
HOTPLUG
*L5002
*R5004 1k
*R5196 10k
*C5134 16V 0.1u
*C5001 16V 10u
*L5001
*C5004 10V 1u
*C5005 16V 0.1u
HDMI5V
*L5003
*L5004
*L5006
*R5030 10k
*C5132 10V 1u
*R5038 33
*R5042 33
*C5032 0.01u
*C5030 16V 0.1u
*C5034 16V 0.1u
*R5024 22
*R5025 22
*C5014 16V 0.1u
*C5015 50V 1000p
HDMIA3.3V
*R5026 390
*C5016 0.01u
*C5017 16V 0.1u
*C5018 16V 0.1u
*C5019 1000p
*C5020 16V 0.1u
*C5021 0.01u
HDMI I/F RECEIVER
Thermal Pad
*IC5003
SII9993CTG100
RESET
INT#
*L5007
*C5133 10V 1u
*L5008
HDMI3.3V
*C5056 16V 0.1u
*C5054
*C5047 1000p
*C5048 50V 1000p
*C5049 16V 0.1u
Pix clk
*C5044 16V 0.1u
HDMIPLL3.3V
*R5040
RX-SCK
RX-WS
RX-SD0#
RX-MCLK
*R5036 33
*R5041 33
*C5024 10V 1u
*C5025 50V 1000p
*C5026 16V 0.1u
*C5027 16V 0.1u
*C5028 0.01u 50V
*C5029 50V 0.01u
*R5031 178
*C5033 16V 0.1u
*C5035 50V 0.01u
*C5036 16V 0.1u
*C5038 50V 0.01u
*C5037 4V 47u
*C5039 16V 0.1u
*R5032 4.7k
*C5040 0.1u 16V
*C5041 1000p 50V
*C5042 4V 47u
*C5046 16V 0.047u
*R5035 3.9k
*C5050 3.3u
*C5131 3.3u
*C5130 3.3u
*C5051 50V 0.01u
HDMIDA3.3V
*L5005
*C5022 16V 0.1u
3.3V_SDA
3.3V_SCL
*R5015 4.7k
*R5014 4.7k
Level-Shifting
*Q5001
*R5007
*R5011
5V_SCL
5V_SDA
HOTPLUG_5V
*D5007
*D5008
*C5003
*C5007
*D5011
*D5012
*R5016 56
*R5008 10k
*R5009 0
*R5013 47k
*R5010 0
DDC EEPROM
DDC1
A0
A1
A2
VSS
VCC
WP
SCL
SDA
*IC5001
FOR DDC RESET
*R5019 47
*Q5002
*R5022 27k
*R5020 33k
*C5135 10V 1u
HOT-PLG
MUTE FOR CABLE IN AND OUT
CABLE IN -> Hi : Norm
CABLE OUT -> Low : Mute
*R5021 10k
*R5023 68
Hi : MUTE
*R5017 33k
*R5018 10k
*Q5003
HDMI-WP
*ZA5101
*ZA5102
*ZA5103
*ZA5104
*ZA5105
*R5073 560
*R5074 270
*FL5026
*R5055 0
*R5068 220
*R5064 75
*Q5006
*R5071 560
*R5072 270
*FL5025
*R5054 0
*R5067 220
*R5063 75
*Q5005
*R5069 560
fcut off=220MHz
*FL5024
*R5053 0
*R5066 220
*R5062 75
*Q5004
*R5070 270

HDMI


*IC5010
IC5009
IC5005
RESET
INT# TO MPU
5V for A_DAC
*IC5006
Audio DAC
AK4384
*IC5007
BA15218FDXE2
LOW MUTE
VIH > 2.2V
VIL < 0.8V
HDMI5V
HDMI3.3V
MAIN9V
SUB5V
AUDIO-DA-POWDN
*Q5014
*Q5011
*Q5013
*Q5016
*Q5007
Q5009
*Q5008
*Q5006
*Q5005
*Q5004
fcut off=220MHz
HDMI-PB
HDMI-Y
HDMI-PR
GUARD-PR
DG1
AAM-V
VAO-L
VAO-R
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8


TNP2AA173AD DG
MAIN9V
HDMI-INT
HDMI-A-MUTE2
HDMI-A-MUTE1
Low->MUTE
Hi=> MUTE
HDMI A MUTE from MPU
HPD for MUTE Hi=>MUTE
*Q5014
*Q5011
*Q5013
*Q5016
*Q5019
*Q5017
*Q5018
*TP029
*TP031
*TP030
*JS5015
HDMI-L
HDMI-R
B8-O-SPB
B8-O-SPR
B8-O-SY
B7-O-MPB
B7-O-MPR
B7-O-MY
*Q1107
*Q1108
AUDIO-DA-PCMDN
HDMI-WP
HOT-PLG
SUB5V
SUB9V
AAM-V
IC3001
IC3002
HDMI-PR
HDMI-PB
HDMI-Y
MAIN-L
MAIN-R
VAO-L
VAO-R
AK-AV4-V
AK-AV4-Y
AK-AV4-C
AK-AV4-S-DET
AV1-Y
AV4-Y.AV4-V.AV4-C.AV4-S-DET.S1/S2-DET.AV4-R.AV4-L
H3->PTV(AB4AE) V009-0096
L3000


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC4205
IC4203
IC4202
IC4012
IC4011
IC4001
GC3FS
GC3FM
IC4201
LPF3M
LPF2M
AD2.5V
Q4202
Q4204
Q4205
Q4206
Q4207
Q4208
Q4209
Q4210
Q4201
Q4001
Q4002
Q4003
Q4004
Q4005
Q4007
Q4008
Q4437
*Q1107
*Q1108
MAIN3.3V
MAIN9V
MAIN2.5V
SUB5V
GUARD_PB
GUARD_PR
CC-CVBS1
CC-CVBS0
CL3001
CL3002
JS4207
JS4008
JS4009
C-SBPLL
C-MBPLL
PLL2.5V
L4203
L4002
L4204
L4206
L4207
L4208
L4209
L4210
L4004
L4005
L4006
L4007
L4008
L4009


GC3FS
IC4201
GC3I
NC
VDDE
MAIN3.3V
MAIN1.8V
IC4411
IC4001
GC3FM
Q4201
C_SBPLL
A
B
SHIELD CASE CLIP
PARTS SIDE(GC3)
SOLDER SIDE
ZA001
ZA002
ZA003
ZA004
ZA005
ZA006
ZA007
ZA008
ZA009
ZA010
ZA011
ZA012
ZA013
ZA014
ZA015
J
I
H
G
F
E
D
C
B
A
1
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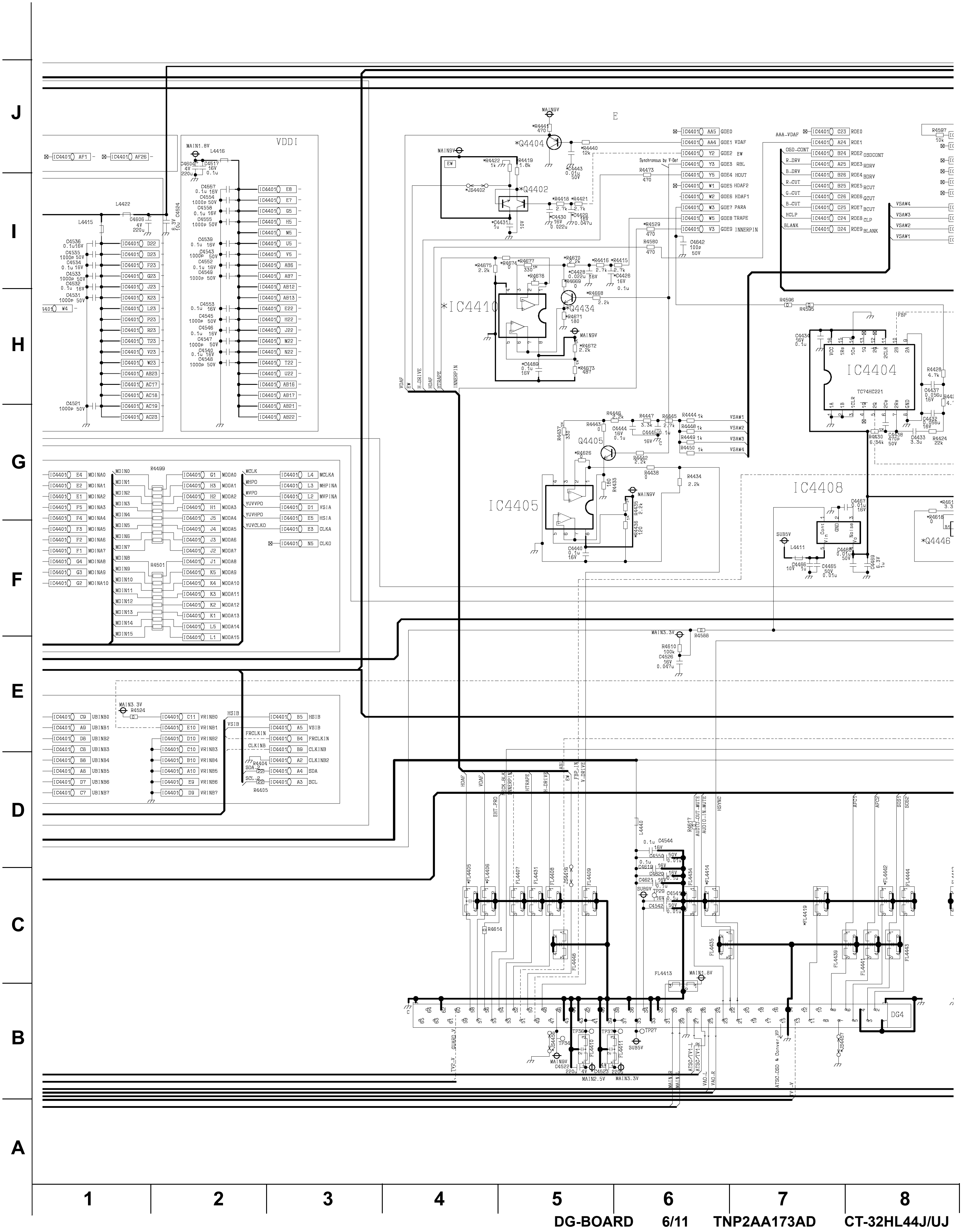
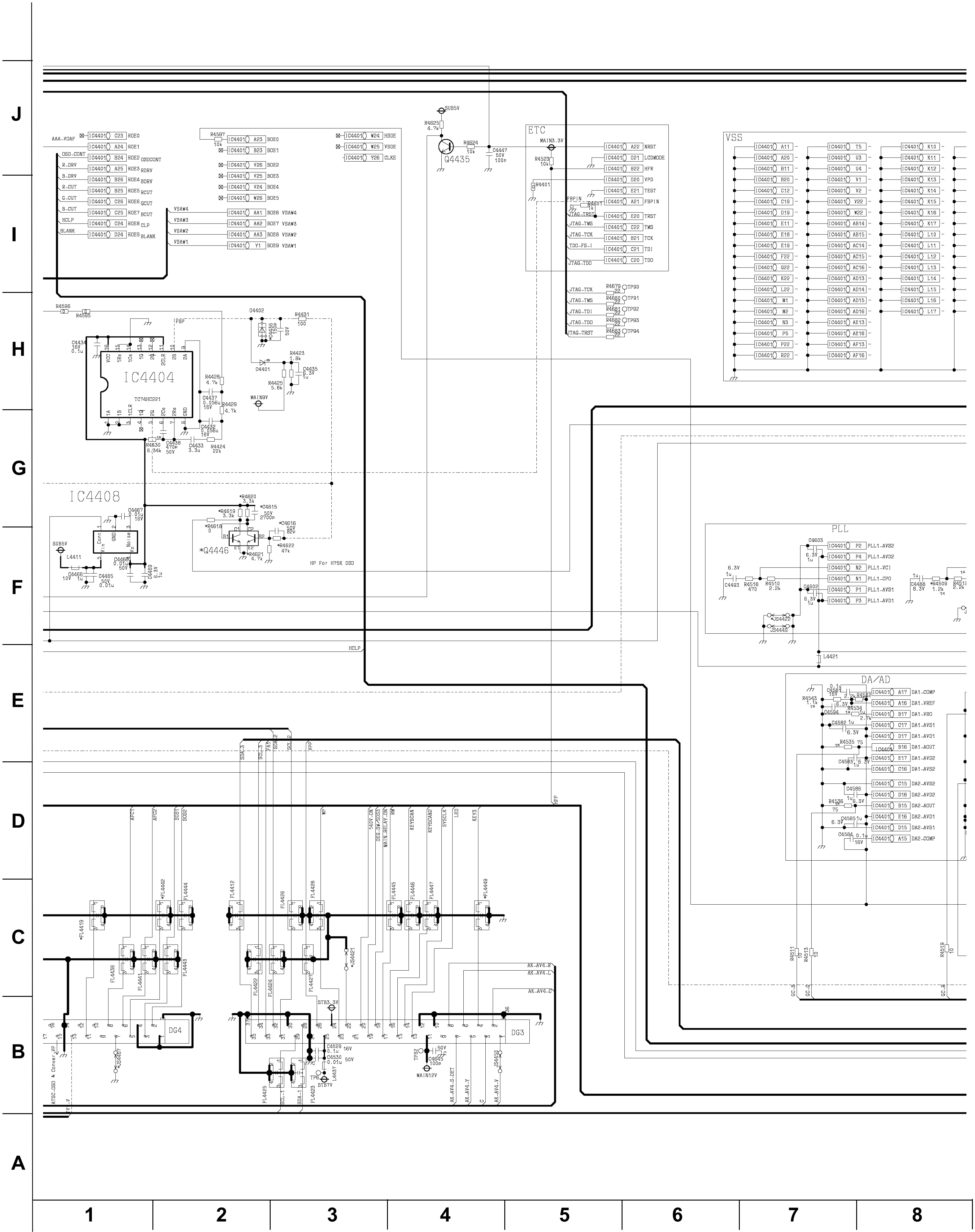
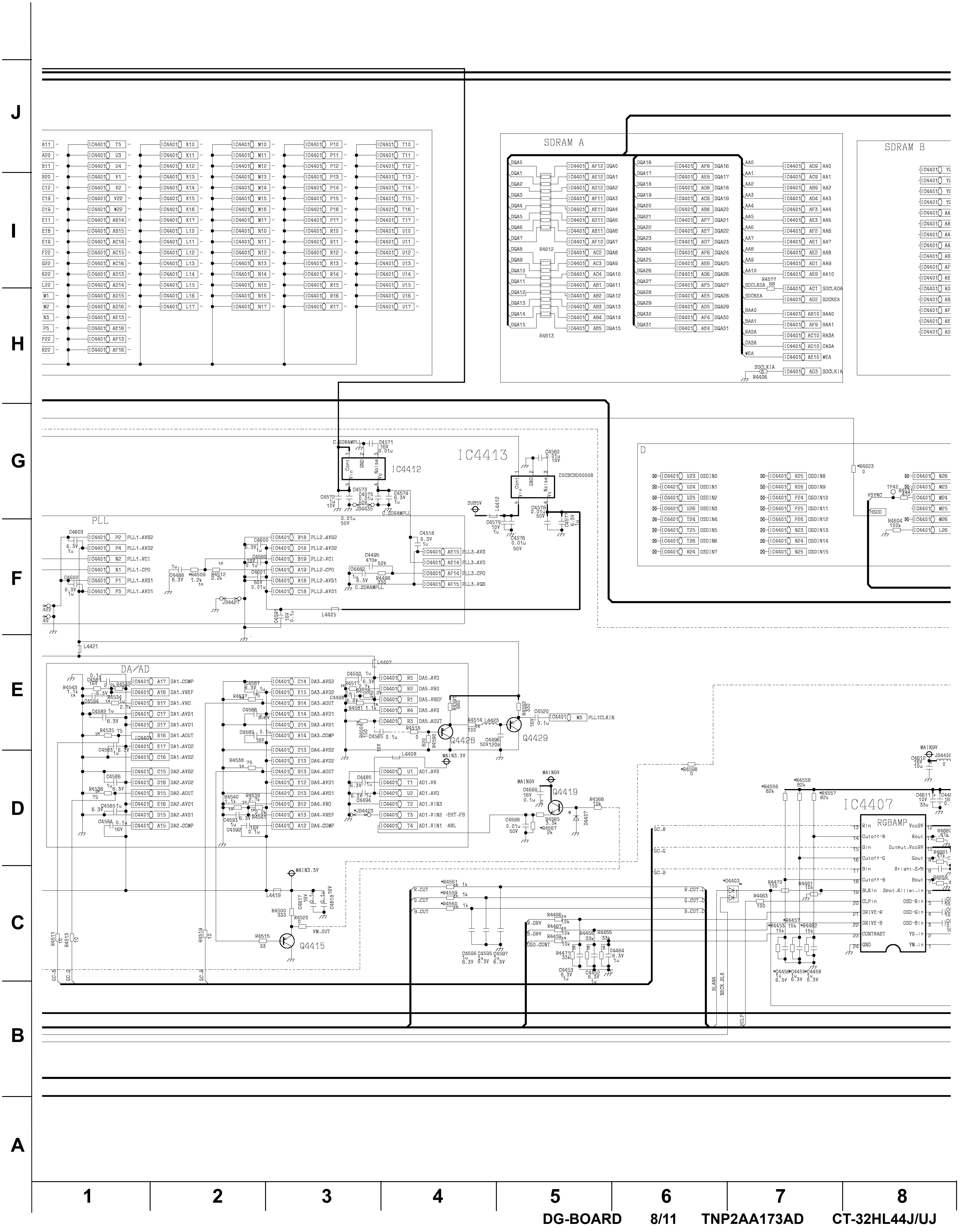
8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
VDDI
MAIN1.8V
L4416
L4422
L4415
IC4401
*Q4404
*Q4402
MAIN9V
EW
*JS4402
E
GOE0
GOE1 VDAF
GOE2 EW
GOE3 RBL
GOE4 HOUT
GOE5 HDAF2
GOE6 HDAF1
GOE7 PARA
GOE8 TRAPE
GOE9 INNERPIN
Synchronous by V-Def
AAA-VDAF
OSD-CONT
R-DRV
B-DRV
R-CUT
G-CUT
B-CUT
HCLP
BLANK
ROE0
ROE1
ROE2 OSDCONT
ROE3 RDRV
ROE4 BDRV
ROE5 RCUT
ROE6 GCUT
ROE7 BCUT
ROE8 CLP
ROE9 BLANK
VSAW4
VSAW3
VSAW2
VSAW1
*IC4410
*Q4434
IC4404
TC74HC221
IC4405
Q4405
IC4408
*Q4446
SUB5V
L4411
MAIN3.3V
R4588
R4610
C4526
R4499
R4501
MDINA0
MDOA0
MCLK
MCLKA
MHPO
MHPINA
MVPO
MVPINA
YUVVPO
VSIA
YUVHPO
HSIA
YUVCLKO
CLKA
CLKO
UBINB0
VRINB0
HSIB
VSIB
FRCLKIN
CLKINB
CLKINB2
SDA
SCL
R4404
R4405
R4524
HDAF
VDAF
EHT_PRO
BECK_BLK
INNERPIN
HTRAPE
H-DRIVE
ABL
EW
FBP_IN
V_DRIVE
L4440
AUDIO-IN-MUTE
AUDIO-OUT-MUTE
HSYNC
AFC1
AFC2
SOS1
SOS2
FL4405
FL4406
FL4407
FL4431
FL4408
FL4409
FL4434
FL4414
FL4442
FL4444
FL4419
FL4435
FL4439
FL4441
FL4443
FL4448
FL4413
FL4410
FL4411
JS4416
JS4436
JS4437
TP34
TP36
TP37
TP27
TP29
MAIN2.5V
SUB9V
TV2_V
GUARD_V
MAIN_R
MAIN_L
ATSC/TV1_L
ATSC/TV1_R
VAO_L
VAO_R
ATSC_OSD & Convey_VP
TV_V
DG4


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
ETC
VSS
PLL
DA/AD
IC4404
TC74HC221
IC4408
Q4435
*Q4446
DG4
DG3
HP For H75K OSD
SUB5V
MAIN3.3V
MAIN9V
MAIN12V
STB3.3V
STB7V
FBP
HCLP
BLANK
OSD_CONT
R_DRV
B_DRV
R_CUT
G_CUT
B_CUT
AAA_VDAF
VSAW1
VSAW2
VSAW3
VSAW4
HSOE
VSOE
CLKE
NRST
LCDMODE
HFR
VPD
TEST
FBPIN
TRST
TMS
TCK
TDI
TDO
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_TRST
TP90
TP91
TP92
TP93
TP94
PLL1_AVS2
PLL1_AVD2
PLL1_VCI
PLL1_CPO
PLL1_AVS1
PLL1_AVD1
DA1_COMP
DA1_VREF
DA1_VRO
DA1_AVS1
DA1_AVD1
DA1_AOUT
DA1_AVD2
DA1_AVS2
DA2_AVS2
DA2_AVD2
DA2_AOUT
DA2_AVD1
DA2_AVS1
DA2_COMP
L4421
L4411
L4437
AFC1
AFC2
SOS1
SOS2
SDA_3
SCL_3
SDA_2
SCL_2
SCL_1
SDA_1
VPP
WP
140V_ON
DEG_SW/SUS3
MAIN_RELAY_ON
RM
KEYSCAN
KEYSCAN2
SYSCLK
LED
KEY3
HFP
AK_AV4_R
AK_AV4_L
AK_AV4_C
AK_AV4_S_DET
AK_AV4_Y
AK_AV4_V
ATSC_OSD & Conver_VP
TV_V
GC_R
GC_G
GC_B


SDRAM A
SDRAM B
IC4413
IC4412
PLL
DA/AD
D
IC4407
RGBAMP
Q4415
Q4419
Q4428
Q4429
C_SDRAMPLL
SUB5V
MAIN3.3V
MAIN9V
VSYNC
HSOD
GC-R
GC-G
GC-B
R-CUT
G-CUT
B-CUT
R-DRV
G-DRV
OSD-CONT
VM-OUT
BLANK
NECK-BLK
HCLP
J
I
H
G
F
E
D
C
B
A
1
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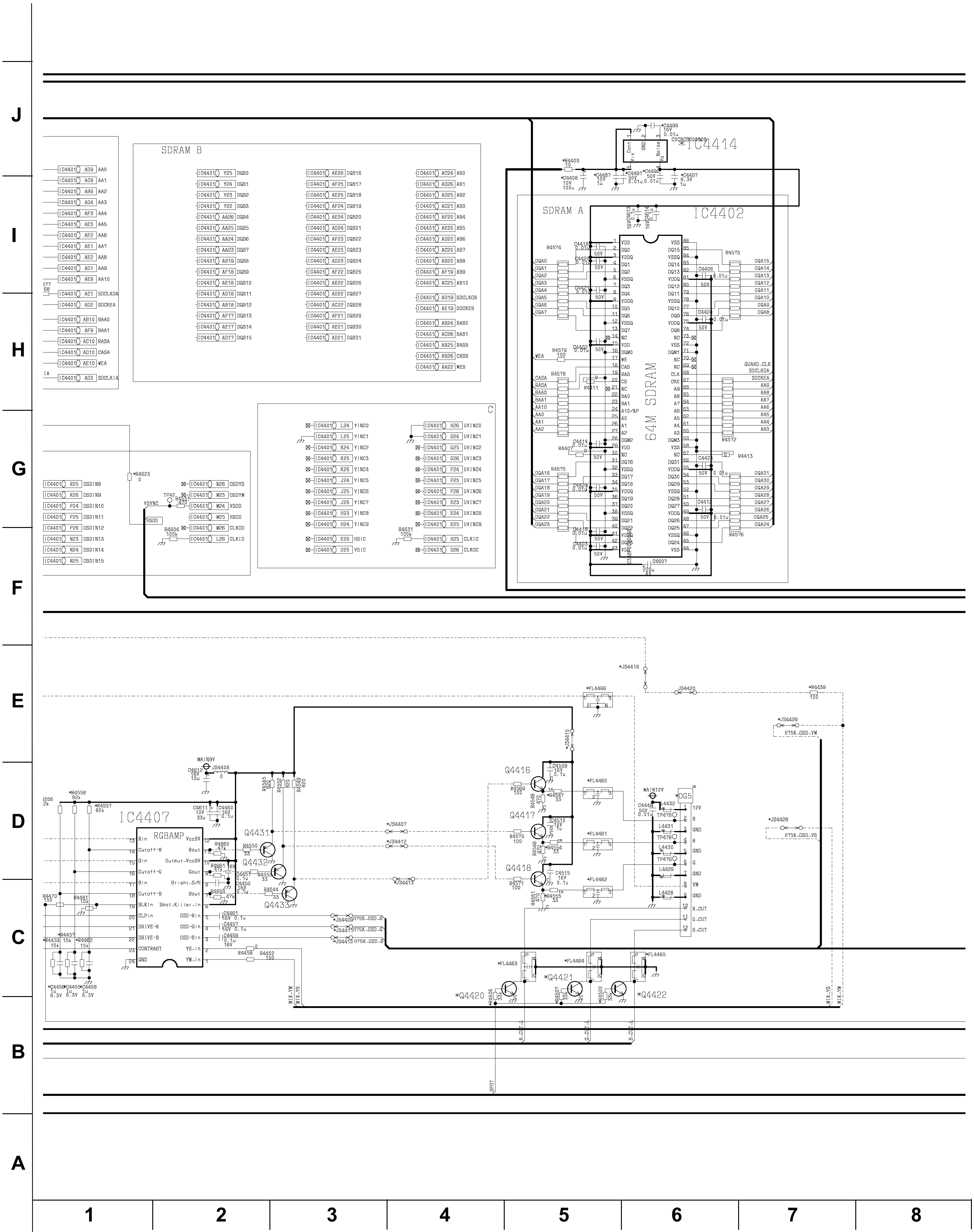
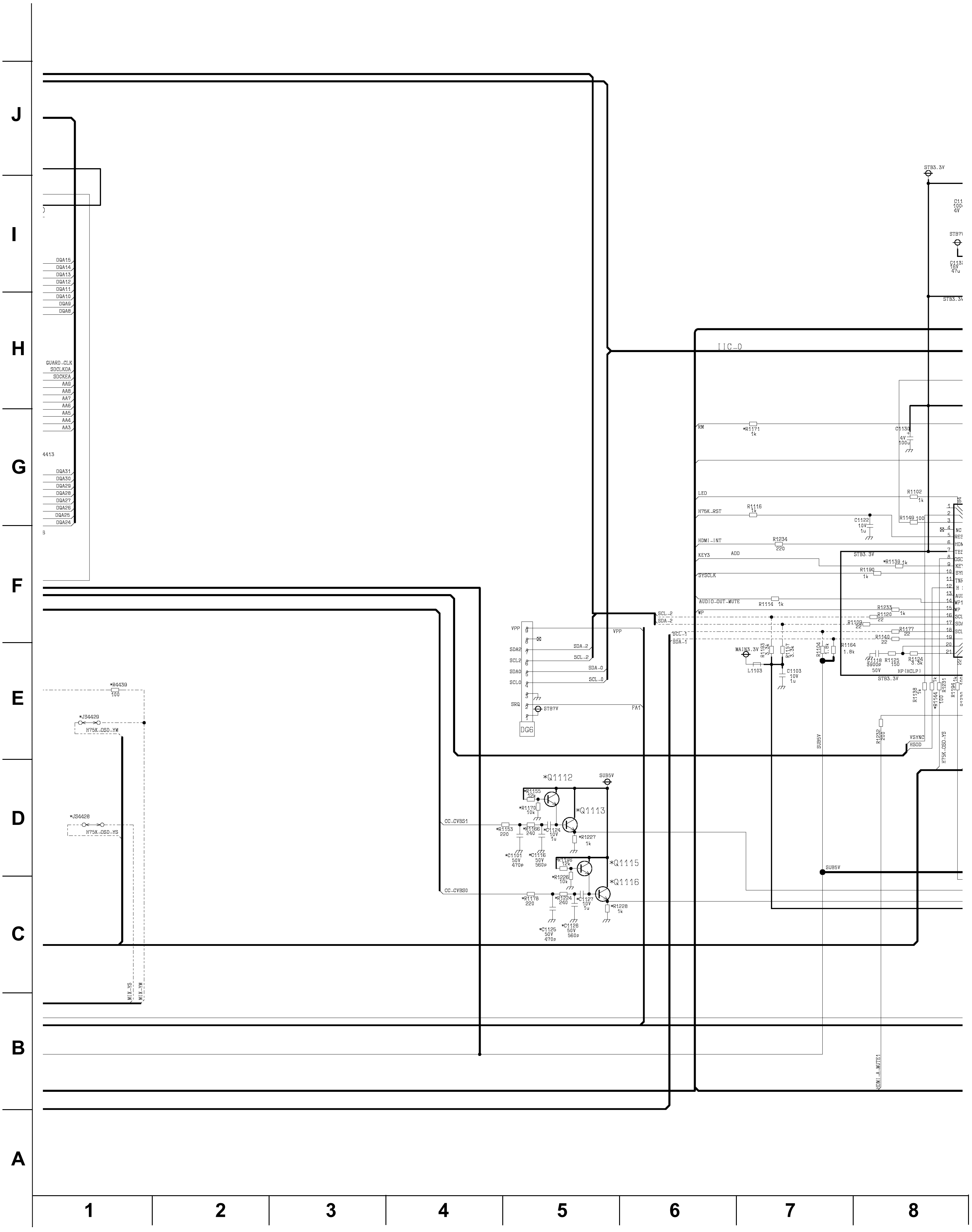

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
SDRAM B
SDRAM A
IC4402
64M SDRAM
*IC4414
C0CBCBD00006
*R4403
10
*C4408
10V
100u
*C4487
10V
1u
*C4491
50V
0.01u
*C4492
50V
0.01u
*C4497
6.3V
1u
*C4499
16V
0.01u
Cont
GND
Noise
Vin
Vo
R4574
R4573
R4578
R4572
R4575
R4576
R4579
100
R4407
R4411
R4413
C4607
220u
4V
VDD
DQ0
VDDQ
DQ1
DQ2
VSSQ
DQ3
DQ4
DQ5
DQ6
DQ7
NC
DQM0
WE
CAS
RAS
CS
BA0
BA1
A10/AP
A0
A1
A2
DQM2
DQ16
DQ17
DQ18
DQ19
DQ20
DQ21
DQ22
DQ23
VSS
DQ15
DQ14
DQ13
DQ12
DQ11
DQ10
DQ9
DQ8
DQM1
CLK
CKE
A9
A8
A7
A6
A5
A4
A3
DQM3
DQ31
DQ30
DQ29
DQ28
DQ27
DQ26
DQ25
DQ24
GUARD-CLK
SDCLKOA
SDCKEA
WEA
CASA
RASA
BAA0
BAA1
AA10
AA0
AA1
AA2
AA3
AA4
AA5
AA6
AA7
AA8
AA9
DQA0
DQA1
DQA2
DQA3
DQA4
DQA5
DQA6
DQA7
DQA8
DQA9
DQA10
DQA11
DQA12
DQA13
DQA14
DQA15
DQA16
DQA17
DQA18
DQA19
DQA20
DQA21
DQA22
DQA23
DQA24
DQA25
DQA26
DQA27
DQA28
DQA29
DQA30
DQA31
IC4401
SDCLKIA
SDCLKOB
SDCKEB
BAB0
BAB1
RASB
CASB
WEB
YINC0
YINC1
YINC2
YINC3
YINC4
YINC5
YINC6
YINC7
YINC8
YINC9
UVINC0
UVINC1
UVINC2
UVINC3
UVINC4
UVINC5
UVINC6
UVINC7
UVINC8
UVINC9
HSIC
VSIC
CLKIC
CLKOC
R4631
100k
OSDIN8
OSDIN9
OSDIN10
OSDIN11
OSDIN12
OSDIN13
OSDIN14
OSDIN15
OSDYS
OSDYM
VSOD
HSOD
CLKOD
CLKID
*R4623
0
TP42
R4531
470
R4604
100k
VSYNC
HSOD
IC4407
RGBAMP
Rin
Cutoff-R
Gin
Cutoff-G
Bin
Cutoff-B
BLKin
CLPin
DRIVE-R
DRIVE-G
DRIVE-B
CONTRAST
GND
Vcc9V
Rout
Output-Vcc9V
Gout
Bright-S/H
Bout
Spot-Killer-in
OSD-Rin
OSD-Gin
OSD-Bin
YS-in
YM-in
MAIN9V
JS4408
C4612
C4611
C4460
Q4431
Q4432
Q4433
Q4416
Q4417
Q4418
*Q4420
*Q4421
*Q4422
*FL4460
*FL4461
*FL4462
*FL4463
*FL4464
*FL4465
*FL4466
*JS4407
*JS4412
*JS4413
*JS4409
*JS4411
*JS4410
*JS4415
*JS4418
JS4420
*R4439
100
*JS4429
H75K-OSD-YM
*JS4428
H75K-OSD-YS
H75K-OSD-R
H75K-OSD-G
H75K-OSD-B
MAIN12V
*DG5
12V
B
GND
R
G
VM
R-CUT
G-CUT
B-CUT
TP47B
TP47R
TP47G
L4428
L4429
L4430
L4431
L4432
MIX-YM
MIX-YS
R-CUT-L
G-CUT-L
B-CUT-L
SPOT
*R4558
82k
*R4557
82k
R4470
150
R4461
10k
*R4457
15k
*R4453
15k
*R4462
15k
*C4456
*C4455
*C4458
6.3V
R4458
R4452
150


J
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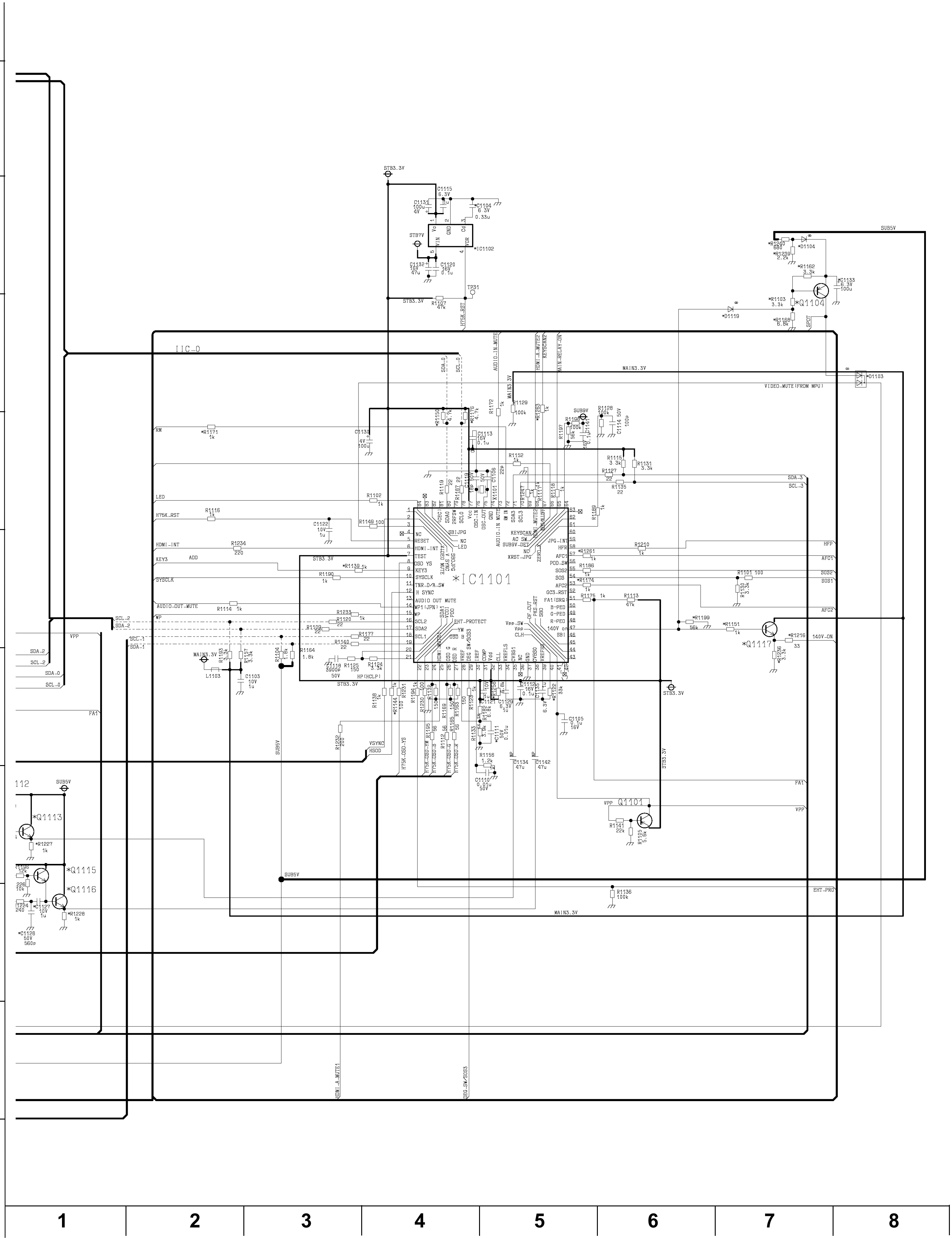
DQA15
DQA14
DQA13
DQA12
DQA11
DQA10
DQA9
DQA8
GUARD-CLK
SDCLK0A
SDCKEA
AA9
AA8
AA7
AA6
AA5
AA4
AA3
4413
DQA31
DQA30
DQA29
DQA28
DQA27
DQA26
DQA25
DQA24
*R4439
100
*JS4429
H75K-OSD-YM
*JS4428
H75K-OSD-YS
MIX-YS
MIX-YM
VPP
SDA2
SCL2
SDA0
SCL0
SRQ
DG6
STB7V
SDA-2
SCL-2
SDA-0
SCL-0
FA1
SCL-2
SDA-2
SCL-1
SDA-1
*Q1112
*Q1113
*Q1115
*Q1116
SUB5V
*R1155
12k
*R1170
10k
*R1166
240
*C1124
10V
1u
*R1227
1k
CC-CVBS1
*R1153
220
*C1101
50V
470p
*C1116
50V
560p
*R1196
12k
*R1226
10k
CC-CVBS0
*R1178
220
*R1224
240
*C1127
10V
1u
*R1228
1k
*C1125
50V
470p
*C1126
50V
560p
IIC-0
STB3.3V
STB7V
RM
*R1171
1k
C1130
4V
100u
LED
R1102
1k
H75K-RST
R1116
1k
C1122
10V
1u
R1149
100
HDMI-INT
R1234
220
KEY3
ADD
*R1139
1k
SYSCLK
R1190
1k
AUDIO-OUT-MUTE
R1114
1k
R1233
1k
WP
R1120
22
R1109
22
R1177
22
R1140
22
MAIN3.3V
L1103
R1193
3.3k
R1157
3.3k
C1103
10V
1u
R1104
1.8k
R1164
1.8k
C1118
3900p
50V
R1125
150
R1124
3.3k
HP(HCLP)
R1138
1k
*R1144
100
R1231
1k
R1194
1k
SUB5V
R1232
200
VSYNC
HSOD
H75K-OSD-YS
HDMI-A-MUTE1
NC
RES
HDM
TES
OSC
KEY
SYS
TNR
AUD
WP1
WP
SCL
SDA
SDL
SCL

J
I
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7
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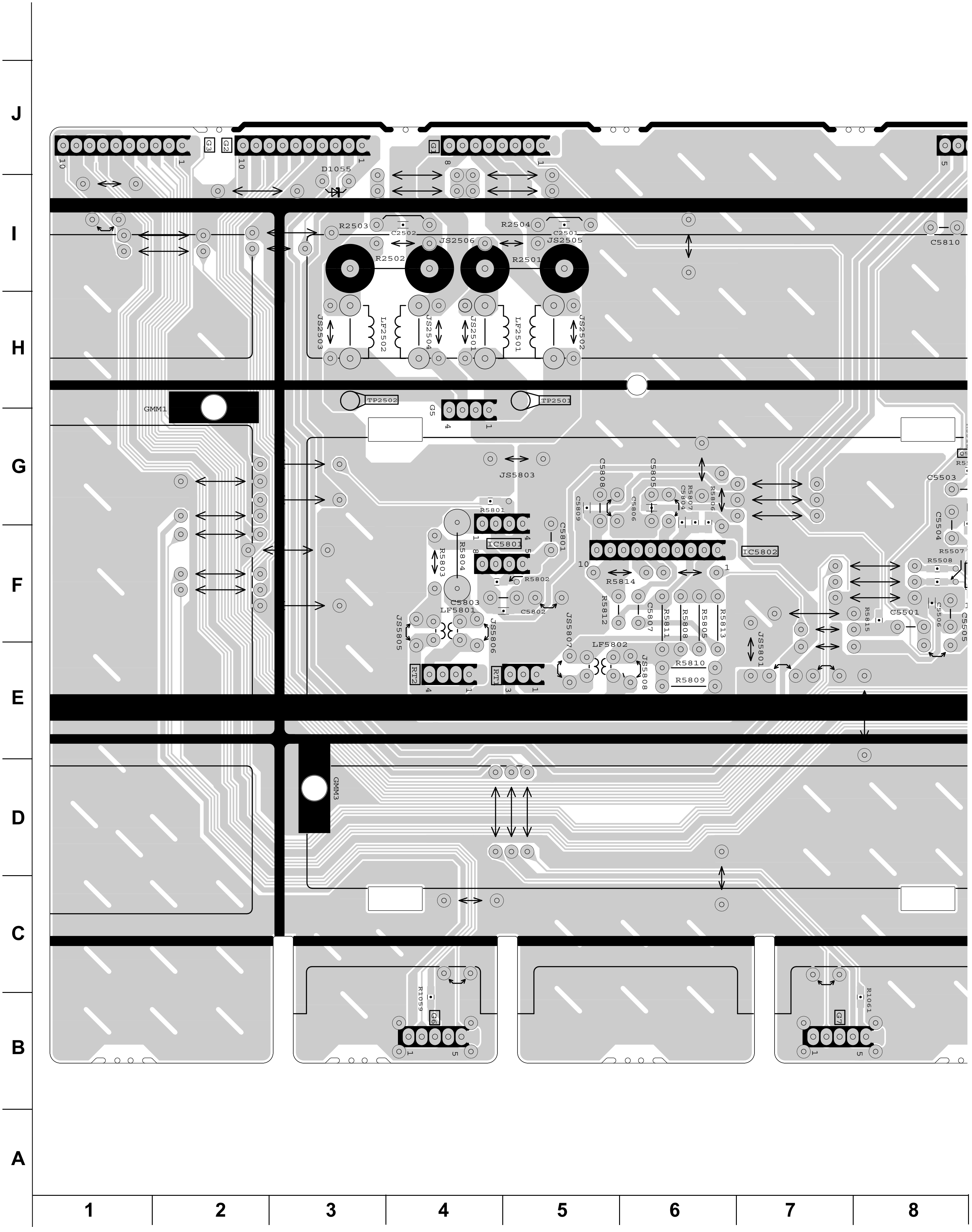
*IC1101
*IC1102
STB3.3V
STB7V
SUB5V
SUB9V
MAIN3.3V
IIC-0
SDA-0
SCL-0
SDA-1
SCL-1
SDA-2
SCL-2
SDA-3
SCL-3
VPP
FA1
RM
LED
H75K_RST
HDMI-INT
KEY3
ADD
SYSCLK
AUDIO-OUT-MUTE
WP
HFP
AFC1
AFC2
SOS2
SOS1
140V-ON
EHT-PRO
VIDEO-MUTE(FROM MPU)
AUDIO-IN-MUTE
HDMI-A-MUTE2
KEYSCAN2
MAIN-RELAY-ON
HDMI-A-MUTE1
DEG-SW/SOS3
VSYNC
HSOD
H75K-OSD-YS
H75K-OSD-YM
H75K-OSD-B
H75K-OSD-G
H75K-OSD-R
*Q1104
*Q1117
Q1101
*Q1113
*Q1115
*Q1116
*D1104
*D1119
*D1103
TP31
L1103
R1107 47k
C1115 6.3V 1u
C1131 100u 4V
*C1104 6.3V 0.33u
C1132 16V 47u
C1120 16V 0.1u
*R1240 680
*R1239 2.2k
*R1162 3.3k
*C1133 6.3V 100u
*R1103 3.3k
*R1166 6.8k
R1101 100
R1130 3.3k
R1113 47k
R1175 1k
*R1199 56k
R1151 1k
*R1216 33
*R1236 3.3k
R1141 22k
R1105 5.6k
R1136 100k
C1105 0.1u 16V
C1134 47u
C1142 47u
C1110 0.01u 50V
R1156 1.2k
*R1171 1k
R1116 1k
R1234 220
*R1139 1k
R1190 1k
R1114 1k
R1233
R1120 22
R1109 22
R1177 22
R1140 22
R1193 3.3k
R1157 3.3k
C1103 10V 1u
R1104 1.8k
R1164 1.8k
C1118 3900P 50V
R1125 150
R1124 3.3k
C1122 10V 1u
R1149 100
R1102 1k
C1130 4V 100u
*R1150 4.7k
*R1176 4.7k
C1113 16V 0.1u
R1152 1k
R1172 1k
R1129 100k
*R1263 1k
R1198 100k
R1128 100k
C1114 50V 100p
R1115 3.3k
R1131 3.3k
R1127 22
R1135 22
R1118 1k
R1189 1k
R1210 1k
*R1261 1k
R1186 1k
*R1174 1k
R1232 200
R1138 1k
*R1144 100
R1231 1k
C1112 16V 0.1u
*R1122 33k
*R1227 1k
*R1228 1k
C1127 10V 1u
*C1126 50V 560p
NC
RESET
HDMI-INT
TEST
OSD YS
KEY3
SYSCLK
TNR-D/A-SW
H SYNC
AUDIO OUT MUTE
WP1(JPN)
SCL2
SDA2
SCL1
HP(HCLP)
EHT-PROTECT
YM
OSD B
OSD G
OSD R
VREF
DEG SW/SOS3
IREF
COMP
Vdd
CLL
VREFLS
CVBS1
GND
CVBS0
VREFHS
SBI
140V on
R-PED
G-PED
B-PED
FA1(SRQ)
GC3-RST
AFC2
SOS
POD-SW
AFC1
HFR
JPG-INT
XRST-JPG
SUB9V-DET
AC SW
KEYSCAN
LED
SBIJPG
OSC-IN
OSC-OUT
X1101
Vpp-SW
Vpp
CLH
DF-CUT
PKS-RST



J
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7
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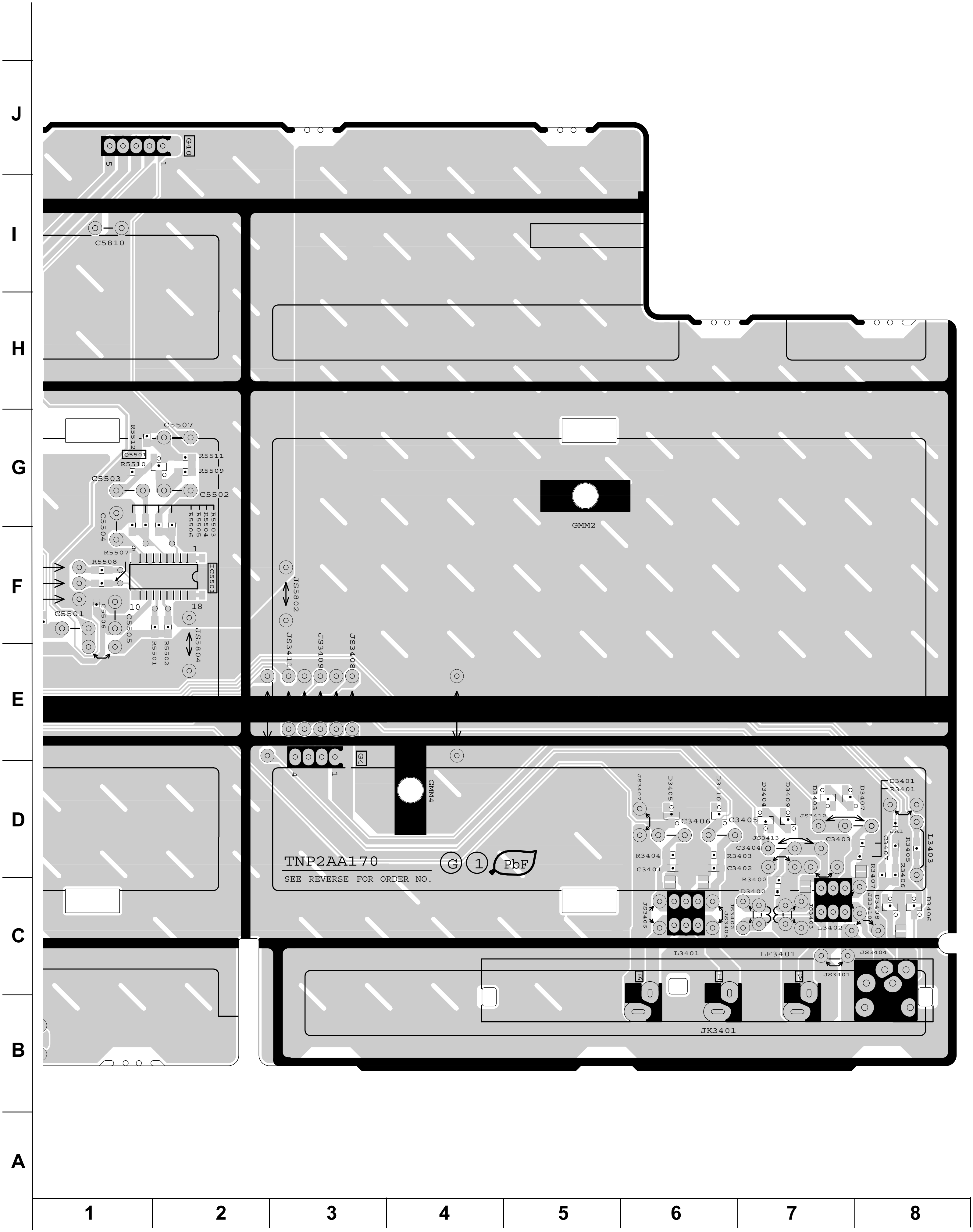
G3
G2
G1
D1055
R2503
C2502
R2504
C2501
C5810
JS2506
JS2505
R2502
R2501
JS2503
LF2502
JS2504
JS2501
LF2501
JS2502
GMM1
TP2502
G5
TP2501
JS5803
C5808
C5805
C5809
C5806
C5804
R5807
R5806
C5503
R5801
IC5801
C5801
R5803
R5804
IC5802
R5814
R5802
C5504
R5507
R5508
C5803
C5802
LF5801
JS5805
JS5806
JS5807
R5812
C5807
R5811
R5808
R5805
R5813
JS5801
R5815
C5501
C5506
C5505
LF5802
JS5808
R5810
R5809
RT2
RT1
GMM3
R1059
G6
R1061
G7

G-BOARD 1/2 TNP2AA170 CT-32HL44J/UJ


J
I
H
G
F
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D
C
B
A
1
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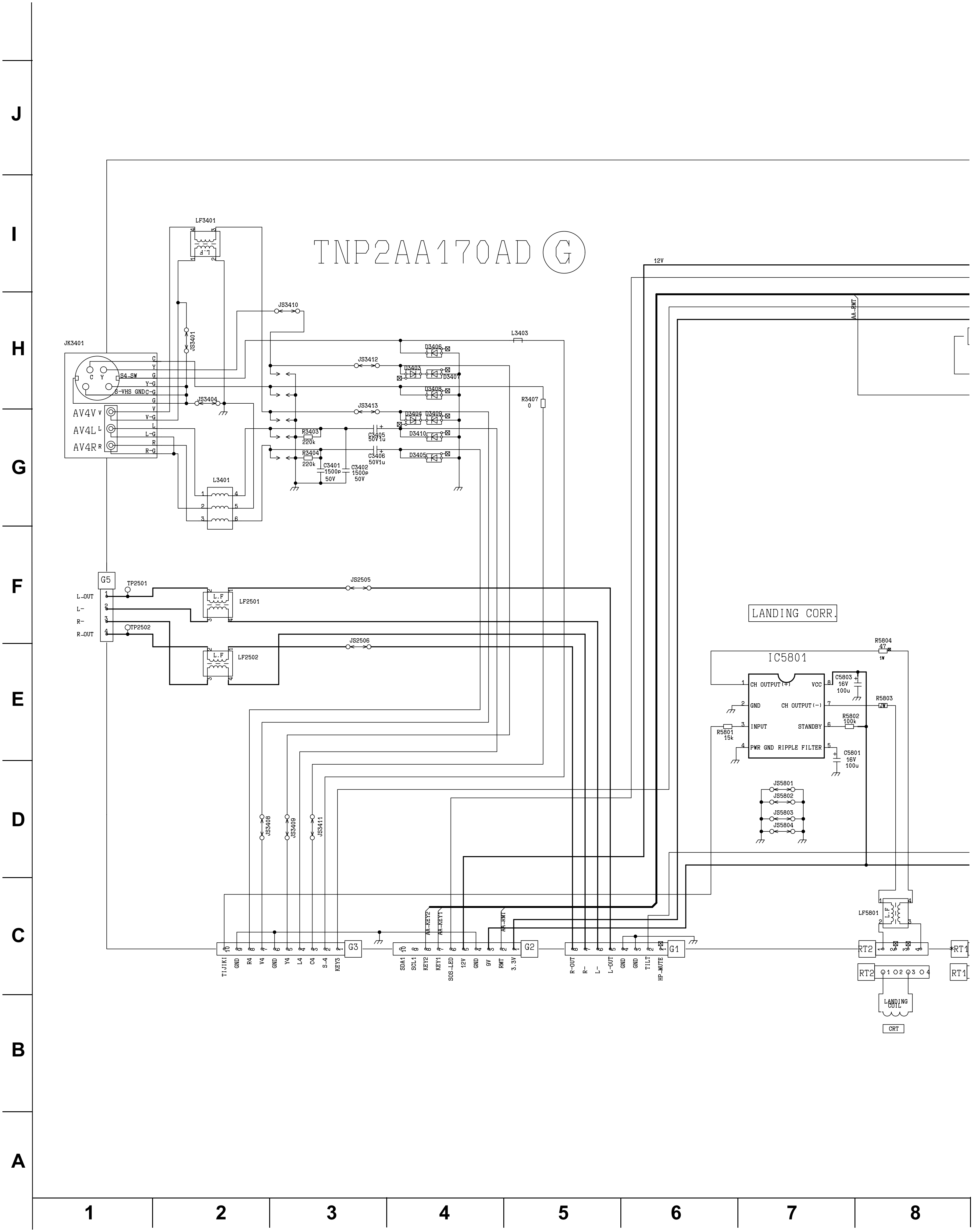
3
4
5
6
7
8
G40
5
1
C5810
R5512
C5507
Q5501
R5510
R5511
R5509
C5503
C5502
C5504
R5506
R5505
R5504
R5503
9
1
R5507
R5508
IC5501
C5501
C5506
10
18
C5505
R5501
R5502
JS5804
JS5802
GMM2
JS3411
JS3409
JS3408
G4
4
1
GMM4
TNP2AA170
SEE REVERSE FOR ORDER NO.
G
1
PbF
JS3407
D3405
D3410
D3404
D3409
D3403
D3407
D3401
R3401
C3406
C3405
JS3412
JA1
C3404
JS3413
C3403
C3407
R3405
L3403
R3404
R3403
C3401
C3402
R3402
R3407
R3406
D3402
JS3406
JS3402
JS3405
JS3403
JS3410
D3408
D3406
L3402
L3401
LF3401
JS3404
JS3401
R
L
V
JK3401


J
I
H
G
F
E
D
C
B
A
TNP2AA170AD G
LF3401
L.F
JK3401
C Y
S4-SW
S-VHS GND
C
Y
G
Y-G
C-G
G
V
V-G
L
L-G
R
R-G
AV4V
AV4L
AV4R
JS3401
JS3404
JS3410
JS3412
JS3413
L3401
L3403
D3406
D3403
D3407
D3408
D3404
D3409
D3410
D3405
R3403 220k
R3404 220k
C3401 1500p 50V
C3402 1500p 50V
C3405 50V1u
C3406 50V1u
R3407 0
12V
AA-RMT
G5
TP2501
TP2502
L-OUT
L-
R-
R-OUT
LF2501
LF2502
JS2505
JS2506
LANDING CORR.
IC5801
R5804 47 1W
CH OUTPUT(+)
VCC
GND
CH OUTPUT(-)
INPUT
STANDBY
PWR GND
RIPPLE FILTER
C5803 16V 100u
R5803
R5802 100k
R5801 15k
C5801 16V 100u
JS5801
JS5802
JS5803
JS5804
JS3408
JS3409
JS3411
G3
TIJIKI
GND
R4
V4
GND
Y4
L4
C4
S-4
KEY3
G2
AA-KEY2
AA-KEY1
AA-RMT
SDA1
SCL1
KEY2
KEY1
SOS-LED
12V
GND
9V
RMT
3.3V
G1
R-OUT
R-
L-
L-OUT
GND
GND
TILT
HP-MUTE
LF5801
L.F
RT2
RT1
LANDING COIL
CRT
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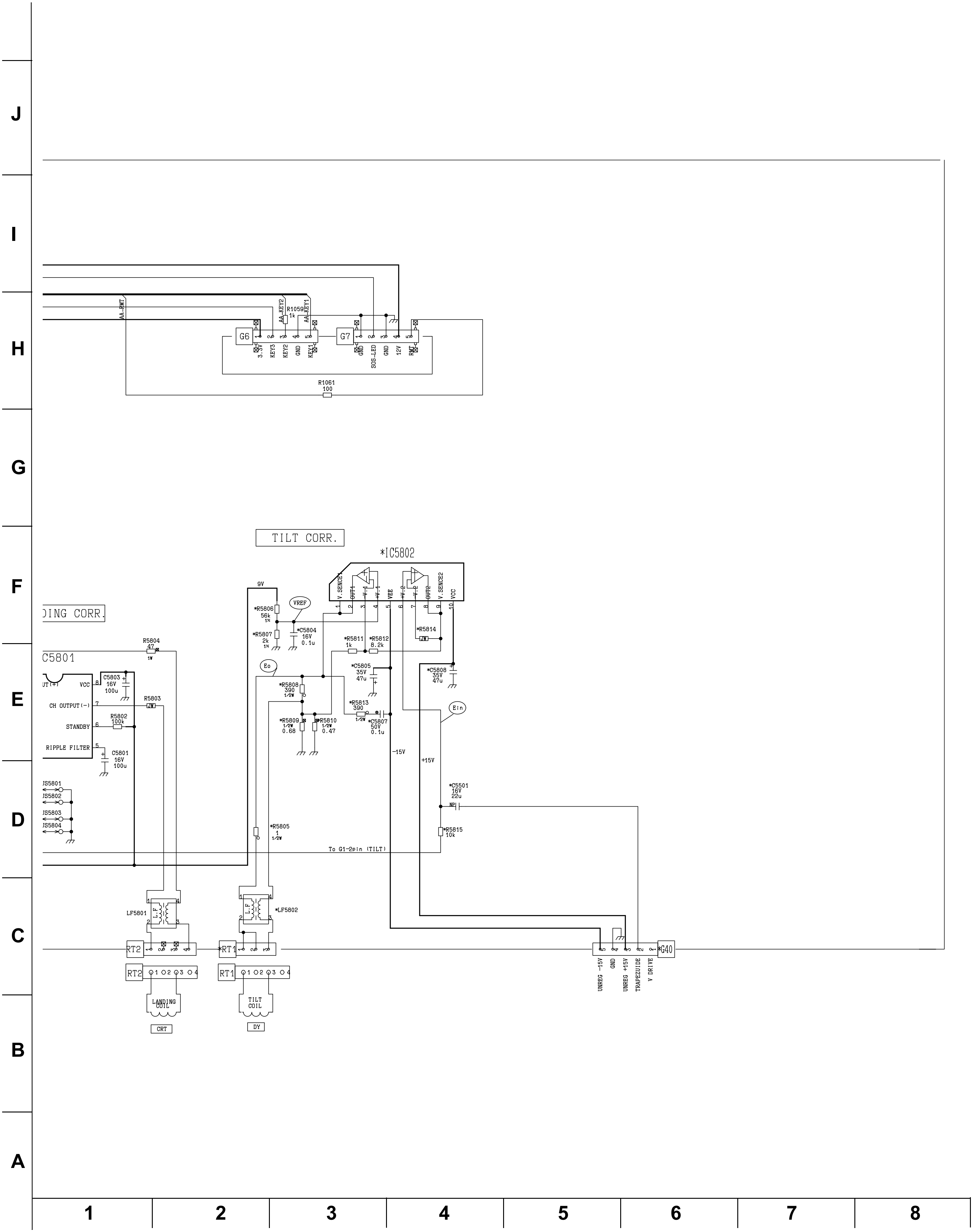

J
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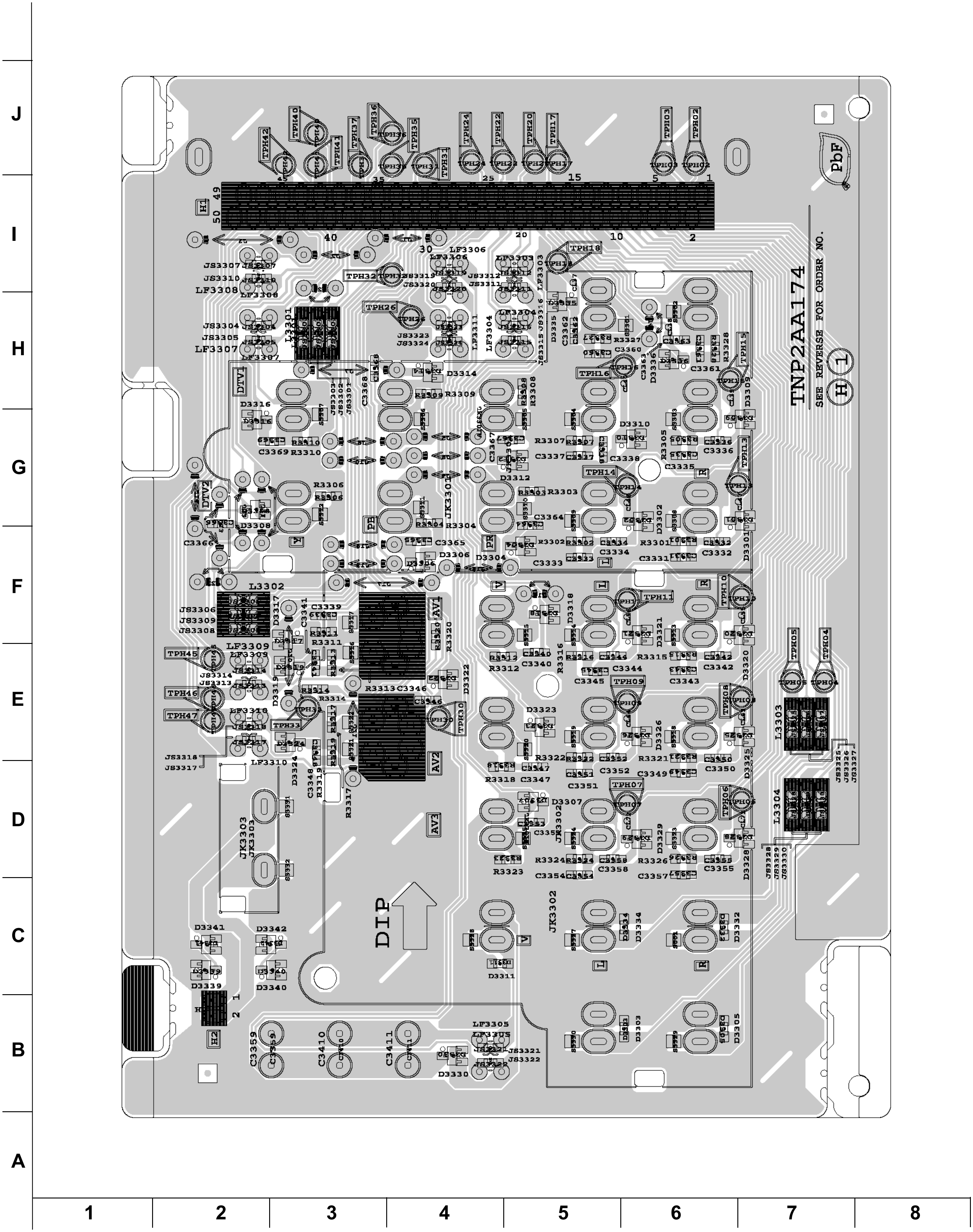
AA-RMT
AA-KEY2
AA-KEY1
R1059
1k
G6
3.3V
KEY3
KEY2
GND
KEY1
G7
GND
SOS-LED
GND
12V
RMT
R1061
100
TILT CORR.
*IC5802
V.SENCE1
OUT1
-V.1
+V.1
VEE
+V.2
-V.2
OUT2
V.SENCE2
VCC
9V
VREF
*R5806
56k
1%
*R5807
2k
1%
*C5804
16V
0.1u
*R5811
1k
*R5812
8.2k
*R5814
*C5805
35V
47u
*C5808
35V
47u
Eo
*R5808
390
1/2W
*R5813
390
1/2W
*C5807
50V
0.1u
*R5809
1/2W
0.68
*R5810
1/2W
0.47
Ein
-15V
+15V
*C5501
16V
22u
NP
*R5815
10k
*R5805
1
1/2W
To G1-2pin (TILT)
DING CORR.
R5804
47
1W
IC5801
UT(+)
VCC
CH OUTPUT(-)
STANDBY
RIPPLE FILTER
C5803
16V
100u
R5803
R5802
100k
C5801
16V
100u
JS5801
JS5802
JS5803
JS5804
LF5801
L.F
*LF5802
RT2
*RT1
RT1
LANDING COIL
CRT
TILT COIL
DY
UNREG -15V
GND
UNREG +15V
TRAPEZUIDE
V DRIVE
*G40



J
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TNP2AA174
SEE REVERSE FOR ORDER NO.
H1
PbF
DIP
H1
H2
DTV1
DTV2
AV1
AV2
AV3
JK3301
JK3302
JK3303
L3301
L3302
L3303
L3304
TPH02
TPH03
TPH04
TPH05
TPH06
TPH07
TPH08
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TPH10
TPH11
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TPH22
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TPH31
TPH32
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TPH35
TPH36
TPH37
TPH40
TPH41
TPH42
TPH45
TPH46
TPH47
C3359
C3410
C3411
LF3305
JS3321
JS3322
D3330
D3339
D3340
D3341
D3342
D3311

J

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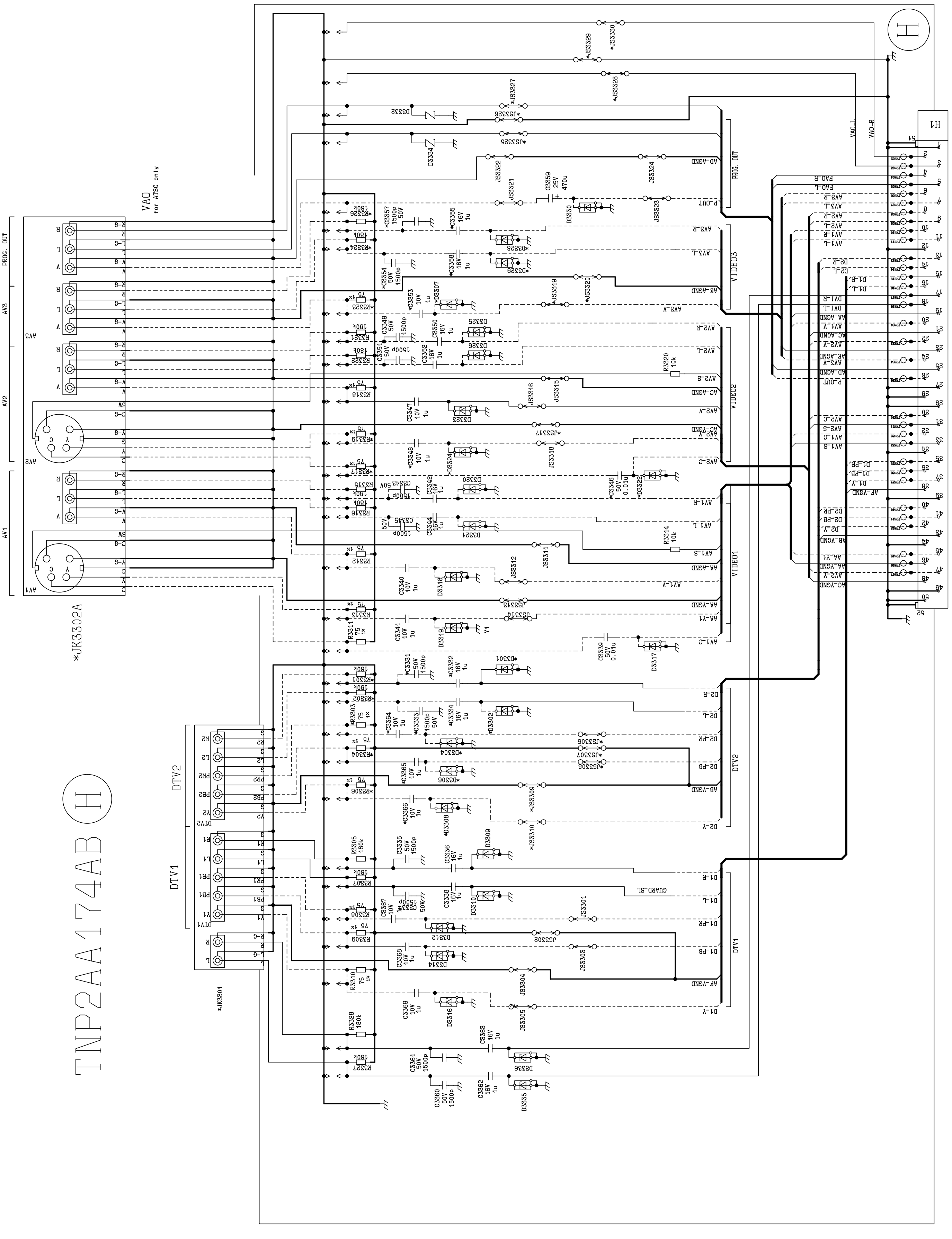
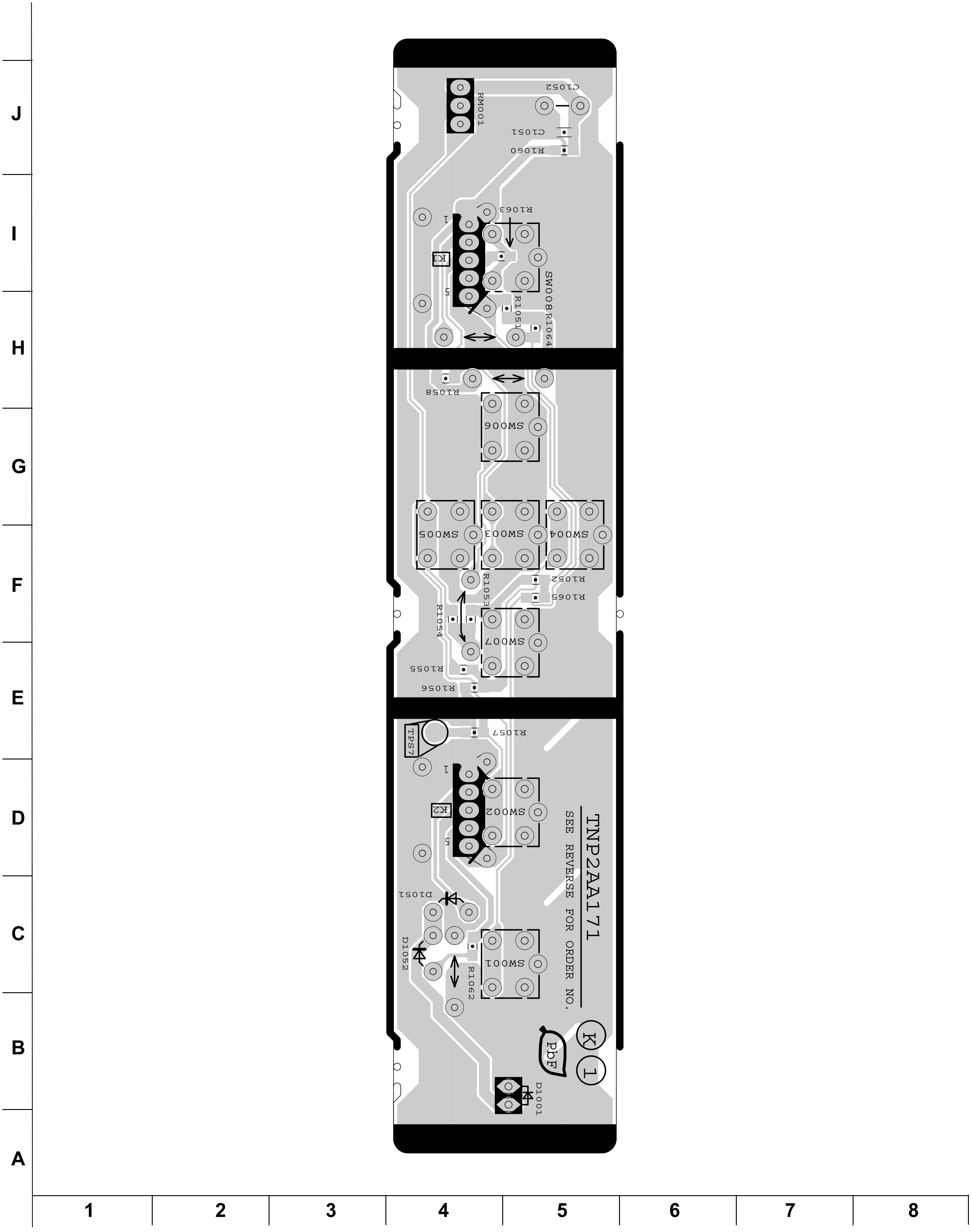
A


TNP2AA174AB
H
*JK3302A
*JK3301
VAO
for ATSC only
PROG. OUT
AV1
AV2
AV3
DTV1
DTV2
VIDEO1
VIDEO2
VIDEO3
DTV1
DTV2
PROG. OUT
H1

1	2	3	4	5	6	7	8


J
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RM001
C1052
C1051
R1060
R1063
K1
SW008
R1051
R1064
R1058
SW006
SW005
SW003
SW004
R1053
R1052
R1065
R1054
SW007
R1055
R1056
R1057
TPS7
K2
SW002
TNP2AA171
SEE REVERSE FOR ORDER NO.
D1051
D1052
SW001
R1062
K
1
PbF
D1001

C502	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C502	ECQB1H104JF3	CAP,P .10UF-J-50V	
C503	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C505	ECQB1H104JF3	CAP,P .10UF-J-50V	
C507	ECEA2CNR47SB	CAP,E .47UF-160V	
C508	ECQB1H104JF3	CAP,P .10UF-J-50V	
C509	ECKR3D222KBP	CAP,C 2200PF-K-2KVDC	
C510	ECWH20392JVY	CAP,P 3900PF-J-2KV	
C511	ECWH20472JVB	CAP,P 4700PF-J-2KV	
C512	ECA1HMR47B	CAP,E .47UF-50V	
C514	ECQM4472JZW	CAP,P 4700PF-J-400V	
C515	ECKR3A222KBP	CAP,C .0022UF-K-1KV	
C516	ECQB1H223JF3	CAP,P .022UF-J-50V	
C517	ECJ2VG1H151J	CAP,C 150-J-50V	
C518	ECKW3D681KBR	CAP,C 680PF-K-2KV	
C519	ECKW3D681KBP	CAP,C 680PF-K-2KV	
C520	ECKW3D222KBP	CAP,C 2200UF-K-2KV	
C521	ECWF2304JSR	CAP,P .30UF-J-200V	
C523	ECQB1H104JF3	CAP,P .10UF-J-50V	
C524	ECQE1224KF3	CAP,P .22UF-K-100V	
C525	EEUNA1E220B	CAP,E 22UF-25V	
C526	ECQB1H104JF3	CAP,P .10UF-J-50V	
C527	ECQV1H224JL3	CAP,P .22UF-J-50V	
C529	ECQB1H473JF3	CAP,P .047UF-J-50V	
C532	ECQB1H104JF3	CAP,P .10UF-J-50V	
C534	ECQB1H103JF3	CAP,P .01UF-J-50V	
C535	ECQV1H104JL3	CAP,P .10UF-J-50V	
C536	ECEA1EN100UB	CAP,E 10UF-25V	
C537	ECQB1H473JF3	CAP,P .047UF-J-50V	
C538	ECA1CM471B	CAP,E 470UF-16V	
C539	ECA1CM471B	CAP,E 470UF-16V	
C541	ECQE6103RKF	CAP,P.010UF-K-100V	
C543	ECKW3D151KBP	CAP,C 150PF-K-2KV	
C544	ECA1HM010B	CAP,E 1UF-50V	
C545	ECKR3D471KBP	CAP,C 470PF-K-2KV	
C546	ECKW3D102KBR	CAP,C 1000PF-K-2KV	
C547	ECKR3A102KBP	CAP,C 1000PF-K-1KV	
C548	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C550	ECCN3A470KGE	CAP,C 47PF-K-1KV	

C551	ECKR3A332KBP	CAP,C 3300PF-K-1KV	
C553	ECA1CM101B	CAP,E 100UF-16V	
C554	ECA1VM101B	CAP,E 100UF-35V	
C555	ECKR3D152KBP	CAP,C .0015UF-K-2KVDC	
C556	ECA1VM470B	CAP,E 47UF-35V	
C558	ECQE2474KF3	CAP,P .47UF-K-200V	
C560	ECA1HM100B	CAP,E 10UF-50V	
C561	ECA2EHG470E	CAP,E 47UF-250V	
C562	ECKR3A561KBP	CAP,C 560PF-K-1KV	
C563	EEUEB2E330E	CAP,E 33UF-100V	
C564	ECA1VM470B	CAP,E 47UF-35V	
C566	ECA1VM470B	CAP,E 47UF-35V	
C567	EEUED2C101E	CAP,E 100UF-100V	
C568	ECWF4683RJB	CAP,P .068UF-R-400V	
C569	ECWF4683RJB	CAP,P .068UF-R-400V	
C571	ECKRHT332KB	CAP,C 3300PF-K	
C573	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C574	ECA1CM100B	CAP,E 10UF-16V	
C575	ECA1CM101B	CAP,E 100UF-16V	
C576	ECA1CM101B	CAP,E 100UF-16V	
C576	ECKR3A331KBP	CAP,C 330PF-K-1KVDC	
C577	ECQE6473RKF	CAP,P .047UF-630V	
C578	ECKW3D681KBR	CAP,C 680PF-K-2KV	
C580	ECQB1H223JF3	CAP,P .022UF-J-50V	
C581	ECQB1H104JF3	CAP,P .10UF-J-50V	
C582	ECQB1H104JF3	CAP,P .10UF-J-50V	
C589	ECQE6184JFB	CAP,P .18UF-J-630V	
C590	ECJ2VB1H471K	CAP,C 470PF-K-50V	
C713	ECKR3A222KBP	CAP,C .0022UF-K-1KV	
C714	ECQE2103KF3	CAP,P .010UF-K-200V	
C801	ECQU2A224MLA	CAP,P .22UF-M-250V	⚠
C802	ECQU2A224MLA	CAP,P .22UF-M-250V	⚠
C803	ECQU2A224MLA	CAP,P .22UF-M-250V	⚠
C804	ECQU2A224MLA	CAP,P .22UF-M-250V	⚠
C805	ECQB1H103JF3	CAP,P .01UF-J-50V	
C806	ECQU2A103MLA	CAP,P .010UF-M-250V	⚠
C807	ECKCNA222MEB	CAP,C 2200PF-M-125V	⚠

C808	ECKCNA222MEB	CAP,C 2200PF-M-125V	⚠
C809	ECQB1H104JF3	CAP,P .10UF-J-50V	
C809	ECQB1H471JF3	CAP,P 470PF-J-50V	
C810	EETHC2D102J	CAP,E 1000UF-200V	
C811	ECA1HM100B	CAP,E 10UF-50V	
C812	ECA1CM471B	CAP,E 470UF-16V	
C813	ECA1HM010B	CAP,E 1UF-50V	
C815	ECA1EM471B	CAP,E 470UF-25V	
C821	ECKW3D332KBP	CAP,C 3300PF-K-2KV	
C822	ECQB1H102JF3	CAP,P 1000PF-J-50V	
C823	ECQB1H471JF3	CAP,P 470PF-J-50V	
C824	ECKW3D102KBP	CAP,C 1000PF-K-2KV	
C825	ECA1HHG470B	CAP,E 47UF-50V	
C826	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C827	ECA1HHG010B	CAP,E 1UF-50V	
C828	ECKR3A331KBP	CAP,C 330PF-K-1KVDC	
C830	EC0S2DA471BB	CAP,E 470UF-200V	
C831	ECKW3D102KBP	CAP,C 1000PF-K-2KV	
C834	EEUFC1H222E	CAP,E 2200UF-50V	
C835	ECA2EM101E	CAP,E 100UF-250V	
C836	ECKR3A151KBP	CAP,C 150PF-K-1KV	
C840	EEUFC1E222E	CAP,E 2200UF-25V	
C841	ECA1VHG222E	CAP,E 2200UF-35V	
C842	ECKR3A331KBP	CAP,C 330PF-K-1KVDC	
C843	ECA1VHG222E	CAP,E 2200UF-35V	
C843	EEUFC1E222E	CAP,E 2200UF-25V	
C844	ECKR3A471KBP	CAP,C 470PF-K-1KV	
C846	ECEA1CN101UB	CAP,E 100UF-16V	
C851	ECKR3A151KBP	CAP,C 150PF-K-1KV	
C852	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C854	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C855	ECA1CM101B	CAP,E 100UF-16V	
C855	EEUFC1A471B	CAP,E 470UF-10V	
C857	ECA1CM471B	CAP,E 470UF-16V	
C857	ECA1HM471E	CAP,E 470UF-50V	
C858	ECA1CM101B	CAP,E 100UF-16V	
C864	ECEA1CN101UB	CAP,E 100UF-16V	
C867	ECQM4103RJZ	CAP,P .01UF-J-400V	

C871	ECA1CM102B	CAP,E 1000UF-16V	
C875	ECA1HM010B	CAP,E 1UF-50V	
C875	ECQB1H473JF3	CAP,P .047UF-J-50V	
C876	ECKR3A331KBP	CAP,C 330PF-K-1KVDC	
C881	ECKR3A471KBP	CAP,C 470PF-K-1KV	
C882	ECA1VHG222E	CAP,E 2200UF-35V	
C900	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C901	ECJ2VC1H102K	CAP,C .001UF-K-50V	
C903	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C905	ECA1CM221B	CAP,E 10UF-16V	
C906	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C910	ECQB1223KF3	CAP,P .22UF-K-100V	
C911	ECQM4103KZ3	CAP,P .01UF-K-400V	
C912	ECA2CM330E	CAP,E 30UF-160V	
C914	ECQB1223KF3	CAP,P .22UF-K-100V	
C915	ECA2CHG330E	CAP,E 33UF-160V	
C916	ECA1CM101B	CAP,E 100UF-16V	
C917	ECA1CM101B	CAP,E 100UF-16V	
C918	ECA1CM221B	CAP,E 10UF-16V	
C919	ECJ2VC1H102K	CAP,C .001UF-K-50V	
C920	ECJ2VC1H102K	CAP,C .001UF-K-50V	
C927	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C1051	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C1052	ECEA1CKA470B	CAP,E 47UF-16V	
C1401	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C1402	ECJ2VF1C104Z	CAP,C .1UF-Z-16V	
C1403	ECA1VM470B	CAP,E 47UF-35V	
C1501	ECA1VM470B	CAP,E 47UF-35V	
C1502	ECQB1H103JF3	CAP,P .01UF-J-50V	
C1505	ECQB1H103JF3	CAP,P .01UF-J-50V	
C1506	ECQB1H223JF3	CAP,P .022UF-J-50V	
C1507	ECQB1H223JF3	CAP,P .022UF-J-50V	
C1522	ECA1VM101B	CAP,E 100UF-35V	
C1523	ECA1VM470B	CAP,E 47UF-35V	
C1526	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C1528	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C1535	ECA1HM100B	CAP,E 10UF-50V	
C1557	ECQB1H102JF3	CAP,P 1000PF-J-50V	
C1558	ECJ2VC1H680J	CAP,C 68PF-J-50V	

C1559	ECQB1H102JF3	CAP,P 1000PF-J-50V	
C1570	ECA1VM470B	CAP,E 47UF-35V	
C2202	ECEA1HKA2R2B	CAP,E 2.2UF-50V	
C2203	ECEA1HKA4R7B	CAP,E 4.7UF-50V	
C2204	AP106K016CAE	CAP,T 1OUF-16V	
C2205	ECEA1HKA010B	CAP,E 1.0UF-50V	
C2206	ECQB1H223JF3	CAP,P .022UF-J-50V	
C2207	AP335K016CAE	CAP,T 3.3UF-16V	
C2208	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C2209	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C2210	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C2211	ECEA1HKA100B	CAP,E 1UF-50V	
C2212	ECQB1H473JF3	CAP,P .047UF-J-50V	
C2215	ECEA1CKA101B	CAP,E 100UF-16V	
C2218	ECEA1HKAR47B	CAP,E .47UF-50V	
C2301	ECEA1HN100UB	CAP,E 10UF-50V	
C2302	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2303	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2304	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2305	ECEA1HN100UB	CAP,E 10UF-50V	
C2306	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2307	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2308	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2310	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2311	ECA1EM221B	CAP,E 220UF-25V	
C2313	ECA1HM4R7B	CAP,E 4.7UF-50V	
C2315	ECA1HM4R7B	CAP,E 4.7UF-50V	
C2318	ECA1HM2R2B	CAP,E 2.2UF-50V	
C2320	F1J1C225A083	CAP,C 2.2UF-Z-16V	
C2321	ECJ2VB1H333K	CAP,C .033UF-K-50V	
C2322	ECEA1CN100UB	CAP,E 10UF-16V	
C2323	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2324	ECJ2VB1H471K	CAP,C 470PF-K-50V	
C2325	ECJ2VC1H270J	CAP,C 27PF-J-50V	
C2326	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2327	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2328	ECA1EM101B	CAP,E 100UF-25V	
C2329	ECJ2VB1H471K	CAP,C 470PF-K-50V	
C2330	ECJ2VB1H331K	CAP,C 330PF-K-50V	

C2331	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2332	ECJ2VB1H682K	CAP,C .0068UF-K-50V	
C2333	ECJ2VB1H331K	CAP,C 330PF-K-50V	
C2334	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2335	ECJ2VB1H471K	CAP,C 470PF-K-50V	
C2336	ECJ2VB1H471K	CAP,C 470PF-K-50V	
C2337	ECJ2VB1H682K	CAP,C .0068UF-K-50V	
C2338	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2341	ECEA1CN100UB	CAP,E 10UF-16V	
C2342	ECJ2VB1H333K	CAP,C .033UF-K-50V	
C2345	EEUFC1E222E	CAP,E 2200UF-25V	
C2346	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2351	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2352	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2352	EEUFC1E222E	CAP,E 2200UF-25V	
C2353	EEUFC1E222E	CAP,E 2200UF-25V	
C2354	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2355	ECJ2VB1H561K	CAP,C 560PF-K-50V	
C2357	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2359	ECQV1H224JL3	CAP,P .22UF-J-50V	
C2362	ECQV1H224JL3	CAP,P .22UF-J-50V	
C2364	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2365	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2365	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	
C2366	EEUFC1E222E	CAP,E 2200UF-25V	
C2370	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2371	ECEA1CN100UB	CAP,E 10UF-16V	
C2372	ECEA1CN100UB	CAP,E 10UF-16V	
C2373	ECA1HM100B	CAP,E 10UF-50V	
C2374	ECA1HM100B	CAP,E 10UF-50V	
C2375	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2376	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2377	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2378	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2404	ECJ2VB1H223K	CAP,C .022UF-K-50V	
C2406	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2408	ECEA1CN100UB	CAP,E 10UF-16V	
C2410	ECA1HM100B	CAP,E 10UF-50V	
C2414	ECJ2VB1H223K	CAP,C .022UF-K-50V	

C2416	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C2418	ECEA1CN100UB	CAP,E 10UF-16V	
C2451	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2452	ECJ2VB1H472K	CAP,C .0047UF-K-50V	
C2453	ECJ2VB1H223K	CAP,C .022UF-K-50V	
C2454	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2455	ECJ2FB1C684K	CAP,C .68UF-Z-16C	
C2456	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2457	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C2458	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2459	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2460	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C2461	ECA1CM221B	CAP,E 10UF-16V	
C2462	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2463	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2464	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2465	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C2466	ECJ2FB1C684K	CAP,C .68UF-Z-16C	
C2467	ECJ2VB1H332K	CAP,C .0033UF-K-50V	
C2468	ECJ2VB1H223K	CAP,C .022UF-K-50V	
C2469	ECJ2VB1H472K	CAP,C .0047UF-K-50V	
C2470	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C2851	ECA1EM471B	CAP,E 470UF-25V	
C2852	ECA1CM221B	CAP,E 10UF-16V	
C2855	ECA1EM471B	CAP,E 470UF-25V	
C2855	ECA1VM221B	CAP,E 220UF-35V	
C2857	EEUFC1C471B	CAP,E 470UF-16V	
C2859	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2861	ECA1CM471B	CAP,E 470UF-16V	
C2861	EEUFC1A471B	CAP,E 470UF-10V	
C2862	ECA1HM471E	CAP,E 470UF-50V	
C2862	ECA1VM471B	CAP,E 470UF-35V	
C2865	ECA1CM221B	CAP,E 10UF-16V	
C2865	ECA1EM221B	CAP,E 220UF-25V	
C2867	EEUFC1A471B	CAP,E 470UF-10V	
C2869	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2870	ECA1CM221B	CAP,E 10UF-16V	
C2870	ECA1EM221B	CAP,E 220UF-25V	
C2872	EEUFC1A471B	CAP,E 470UF-10V	

C2874	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2875	ECA1CM471B	CAP,E 470UF-16V	
C2877	EEUFC1A102B	CAP,E 1000UF-10V	
C2877	EEUFC1A471B	CAP,E 470UF-10V	
C2879	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2881	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C2882	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C2884	ECA0JM222B	CAP,E 2200UF-6.3V	
C2891	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C2892	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C3331	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3332	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3333	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3334	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3335	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3336	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3337	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3338	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3339	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C3340	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3341	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3342	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3343	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3344	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3345	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3346	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C3347	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3348	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3349	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3350	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3351	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3352	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3353	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3354	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3355	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3357	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3358	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3359	ECA1EM471E	CAP,E 470UF-25V	
C3360	ECJ2VB1H152K	CAP,C .0015UF-K-50V	

C3361	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3362	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3363	ECJ2VF1C105Z	CAP,C 1.0UF-Z-16V	
C3364	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3365	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3366	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3367	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3368	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3369	ECJ2YB1A105K	CAP,C 1.0UF-K-125V	
C3401	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3402	ECJ2VB1H152K	CAP,C .0015UF-K-50V	
C3405	ECA1HM010B	CAP,E 1UF-50V	
C3406	ECA1HM010B	CAP,E 1UF-50V	
C3801	ECA1CM101B	CAP,E 100UF-16V	
C3802	ECA1VM470B	CAP,E 47UF-35V	
C3803	ECJ2VF1H103Z	CAP,C .01UF-Z-50V	
C3804	ECQE2104KF3	CAP,P .10UF-K-200V	
C3805	ECA2DM330B	CAP,E 33UF-200V	
C3806	ECQE2474KF3	CAP,P .47UF-K-200V	
C3807	ECQE2474KF3	CAP,P .47UF-K-200V	
C3808	ECKC3D332KBN	CAP,C 3300PF-K-2KV	
C3809	ECQE2474KF3	CAP,P .47UF-K-200V	
C3811	ECQE2103KF3	CAP,P .010UF-K-200V	
C3812	ECQE2104KF3	CAP,P .10UF-K-200V	
C3813	ECQE2104KF3	CAP,P .10UF-K-200V	
C3814	ECQE2104KF3	CAP,P .10UF-K-200V	
C3815	ECQE2103KF3	CAP,P .010UF-K-200V	
C3816	ECQE2103KF3	CAP,P .010UF-K-200V	
C3817	ECQE2103KF3	CAP,P .010UF-K-200V	
C3825	ECA2EM010B	CAP,E 1UF-250V	
C3826	ECA1VM470B	CAP,E 47UF-35V	
C3827	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C3828	ECJ2VB1H103K	CAP,C .01UF-K-50V	
C3829	ECKR2H102KB5	CAP,C 1000PF-K-500V	
C3830	ECA2EM470E	CAP,E 47UF-250V	
C456A	ECJ2VB1H472K	CAP,C .0047UF-K-50V	
C468A	ECJ2VB1H272K	CAP,C .0027UF-K-50V	
C469A	ECJ2FB1H104K	CAP,C .1UF-K-50V	
C502A	ECJ2VF1H104Z	CAP,C .1UF-Z-50V	

C503A	ECJ2VB1H102K	CAP,C .001UF-K-50V	
C5501	ECEA1CN220UB	CAP,E 22UF-16V	
C5506	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C5507	ECEA1CN220UB	CAP,E 22UF-16V	
C5801	ECA1CM101B	CAP,E 100UF-16V	
C5803	ECA1CM101B	CAP,E 100UF-16V	
C5804	ECJ2VB1C104K	CAP,C .1UF-K-16V	
C5805	ECA1VM470B	CAP,E 47UF-35V	
C5807	ECQB1H104JF3	CAP,P .10UF-J-50V	
C5808	ECA1VM470B	CAP,E 47UF-35V	
DIODES			
D005	MA3X152K0L	DIODE	
D009	MA2C165001VT	DIODE	
D012	MAZ40360MF	DIODE, ZENER	
D460	MA2C165001VT	DIODE	
D461	MA2C165001VT	DIODE	
D462	MAZ40300MF	DIODE, ZENER	
D463	MA2C165001VT	DIODE	
D465	MAZ40390MF	DIODE, ZENER	
D466	MA2C165001VT	DIODE	
D468	MA2C165001VT	DIODE	
D469	MAZ40300MF	DIODE, ZENER	
D470	MA2C165001VT	DIODE	
D471	MA2C700A0F	DIODE	
D501	MAZ41500MF	DIODE, ZENER	
D502	MAZ41500MF	DIODE, ZENER	
D503	B0HALP000002	DIODE, FAST RECOVERY	
D506	B0JAME000058	DIODE, SCHOTTKY BARRIER	
D507	B0JAME000058	DIODE, SCHOTTKY BARRIER	
D508	B0HAGV000004	DIODE, FAST RECOVERY	
D509	MA2C165001VT	DIODE	
D510	MAZ40820MF	DIODE, ZENER	⚠
D511	B0EALV000001	DIODE, RECTIFIER	
D513	MAZ42700MF	DIODE, ZENER	
D516	MAZ40390MF	DIODE, ZENER	
D517	B0HALP000002	DIODE, FAST RECOVERY	
D518	MA2C165001VT	DIODE	
D519	B0HALP000002	DIODE, FAST RECOVERY	

D521	MAZ41800MF	DIODE, ZENER	
D522	B0AAGR000002	DIODE, SWITCHING	
D523	FMRG5HSLF731	DIODE	
D524	MA2C165001VT	DIODE	
D525	B0HALP000002	DIODE, FAST RECOVERY	
D528	B0HALP000002	DIODE, FAST RECOVERY	
D532	MA2C165001VT	DIODE	
D533	MA2C700A0F	DIODE	
D534	MA2C165001VT	DIODE	
D539	MA2C165001VT	DIODE	
D540	B0HALP000002	DIODE, FAST RECOVERY	
D541	B0JAME000058	DIODE, SCHOTTKY BARRIER	
D542	B0HACW000002	DIODE, FAST RECOVERY	
D542	B0JAME000058	DIODE, SCHOTTKY BARRIER	
D543	MA2C165001VT	DIODE	
D544	B0AAGR000002	DIODE, SWITCHING	
D545	B0AAGR000002	DIODE, SWITCHING	
D549	MA2C165001VT	DIODE	
D556	B0HAHM000008	DIODE, FAST RECOVERY	
D584	MA2C165001VT	DIODE	
D701	MA2C029TAF	DIODE	
D702	MA2C029TAF	DIODE	
D801	B0FBAT000005	DIODE, RECTIFIER	⚠
D803	D4DDF1R50001	DIODE	⚠
D804	B0EAKL000008	DIODE, RECTIFIER	
D805	B0EAKL000008	DIODE, RECTIFIER	
D807	MA2C165001VT	DIODE	
D809	ERZV10D391	VARISTOR, SURGE ABSORBER	⚠
D811	B0EAKL000008	DIODE, RECTIFIER	
D814	MA2C165001VT	DIODE	
D815	MA2C165001VT	DIODE	
D816	MA2C165001VT	DIODE	
D817	MAZ42200LF	DIODE, ZENER	
D819	MA2C165001VT	DIODE	
D820	AU01ZV0	DIODE	
D821	AU01ZV0	DIODE	
D822	B0HAMM000036	DIODE, FAST RECOVERY	
D823	MAZ406800F	DIODE, ZENER	

D824	B0BA01000046	DIODE, VOLTAGE REGULATION	
D825	B0HANR000003	DIODE, FAST RECOVERY	
D827	B0HANM000016	DIODE, FAST RECOVERY	
D828	MA3D690	DIODE	
D829	S2L20UF04P12	DIODE	
D830	MA3D690	DIODE	
D831	MAZ41300MF	DIODE, ZENER	
D832	MAZ41100HF	DIODE, ZENER	
D832	MAZ41500MF	DIODE, ZENER	
D833	MA2C165001VT	DIODE	
D834	MAZ40360MF	DIODE, ZENER	
D835	MA2C165001VT	DIODE	
D836	MAZ41600MF	DIODE, ZENER	
D837	B0HAGV000004	DIODE, FAST RECOVERY	
D844	MA2C165001VT	DIODE	
D845	MAZ41500MF	DIODE, ZENER	
D850	MA2C165001VT	DIODE	
D857	MA2C165001VT	DIODE	
D859	MA2C165001VT	DIODE	
D861	AU02ZV0	DIODE	
D862	MA2C165001VT	DIODE	
D863	MAZ43300MF	DIODE, ZENER	
D866	B0EAKT000018	DIODE, RECTIFIER	
D867	MA2C165001VT	DIODE	
D870	B0HANM000016	DIODE, FAST RECOVERY	
D875	MA3D690	DIODE	
D876	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D1001	LN81RPH	DIODE	
D1051	MA2C165001VT	DIODE	
D1052	MA2C165001VT	DIODE	
D1401	MA3X152E0L	DIODE	
D1503	MA3X152K0L	DIODE	
D1550	MA2C700A0F	DIODE	
D1555	B0EAKL000008	DIODE, RECTIFIER	
D1560	MAZ40360MF	DIODE, ZENER	
D2301	MAZ42700MF	DIODE, ZENER	
D2302	MA3X152K0L	DIODE	
D2303	MA2C16700E	DIODE	
D2305	MA3X152K0L	DIODE	

D2307	MA2C16700E	DIODE	
D2308	MAZ42700MF	DIODE, ZENER	
D2325	MA3X152K0L	DIODE	
D2351	MA2C16700E	DIODE	
D2852	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D2856	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D2858	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D2860	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D2861	B0JAME000058	DIODE, SCHOTTKY BARRIER	
D2862	B0JCME000025	DIODE, SCHOTTKY BARRIER	
D2881	MA2C165001VT	DIODE	
D2882	MA2C165001VT	DIODE	
D2883	MA2C165001VT	DIODE	
D2884	MA2C165001VT	DIODE	
D3301	MAZ31100ML	DIODE, ZENER	
D3302	MAZ31100ML	DIODE, ZENER	
D3304	MAZ31100ML	DIODE, ZENER	
D3306	MAZ31100ML	DIODE, ZENER	
D3307	MAZ31100ML	DIODE, ZENER	
D3308	MAZ31100ML	DIODE, ZENER	
D3309	MAZ31100ML	DIODE, ZENER	
D3310	MAZ31100ML	DIODE, ZENER	
D3312	MAZ31100ML	DIODE, ZENER	
D3314	MAZ31100ML	DIODE, ZENER	
D3316	MAZ31100ML	DIODE, ZENER	
D3317	MAZ31100ML	DIODE, ZENER	
D3318	MAZ31100ML	DIODE, ZENER	
D3319	MAZ31100ML	DIODE, ZENER	
D3320	MAZ31100ML	DIODE, ZENER	
D3321	MAZ31100ML	DIODE, ZENER	
D3322	MAZ31100ML	DIODE, ZENER	
D3323	MAZ31100ML	DIODE, ZENER	
D3324	MAZ31100ML	DIODE, ZENER	
D3325	MAZ31100ML	DIODE, ZENER	
D3326	MAZ31100ML	DIODE, ZENER	
D3328	MAZ31100ML	DIODE, ZENER	
D3329	MAZ31100ML	DIODE, ZENER	
D3330	MAZ31100ML	DIODE, ZENER	
D3332	CVS20A120MTA	DIODE	

D3334	CVS20A120MTA	DIODE	
D3335	MAZ31100ML	DIODE, ZENER	
D3336	MAZ31100ML	DIODE, ZENER	
D3403	MAZ31100ML	DIODE, ZENER	
D3404	MAZ31100ML	DIODE, ZENER	
D3405	MAZ31100ML	DIODE, ZENER	
D3406	MAZ31100ML	DIODE, ZENER	
D3407	MAZ31100ML	DIODE, ZENER	
D3408	MAZ31100ML	DIODE, ZENER	
D3409	MAZ31100ML	DIODE, ZENER	
D3410	MAZ31100ML	DIODE, ZENER	
D3801	MAZ40620L3TV	DIODE, ZENER	
D3805	MA2C18800E	DIODE	
D3807	MA2C18800E	DIODE	
D3812	MAZ41300MF	DIODE, ZENER	
D3813	B0HAGP000003	DIODE, FAST RECOVERY	
D3816	MA2C18800E	DIODE	
D3817	MA2C18800E	DIODE	
D3819	MA2C0290AF	DIODE	
D3820	MA2C0290AF	DIODE	
D3821	MA2C0290AF	DIODE	
D3823	B0HALP000002	DIODE, FAST RECOVERY	
D3824	B0HAGP000003	DIODE, FAST RECOVERY	
D3831	B0HALP000002	DIODE, FAST RECOVERY	
D3833	B0HALP000002	DIODE, FAST RECOVERY	
D3834	MA2C18800E	DIODE	
D3835	MA2C18800E	DIODE	
D3836	MA2C18800E	DIODE	
D3837	MA2C18800E	DIODE	
D3838	MA2C18800E	DIODE	
D3839	MA2C18800E	DIODE	
D3844	ERZV07D361	VARISTOR, SURGE ABSORBER	
D3850	MA2C18800E	DIODE	
FUSES			
F801	XBA2A00101	FUSE 6.3A 125V	⚠
INTEGRATED CIRCUITS			
IC002	TVR2AJ202S	EEPROM	
IC006	C1AB00000441	INT. CKT.	

IC451	C1AA00000665	INT CKT	
IC500	C0AABB000107	IC (OPERATIONAL AMPLIFIER)	
IC501	AN1431T-TA	INT CKT	
IC502	AN5751N	INT CKT	
IC503	0N3171R	INT CKT	
IC504	0N3171R	INT CKT	
IC507	AN6914	INT CKT	
IC801	C5HABZZ00126	INT CKT	
IC802	C0EAS0000024	IC (VOLTAGE DETECTING)	
IC804	B0EBKM000016	DIODE, RECTIFIER	
IC805	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC811	0N3171R	INT CKT	⚠
IC1401	C0BBBA000043	IC (COMPARATOR)	
IC1501	C0BBBA000043	IC (COMPARATOR)	
IC1502	C0ABBA000073	IC (OPERATIONAL AMPLIFIER)	
IC1503	C0BBBA000043	IC (COMPARATOR)	
IC2201	AN5849S-E1V	INT CKT	
IC2301	C1AA00000645	INT CKT	
IC2303	C0BBBA000043	IC (COMPARATOR)	
IC2305	C0ABBA000073	IC (OPERATIONAL AMPLIFIER)	
IC2451	NJW1164MPTE1	INT. CKT.	
IC2851	C0CACKG00003	IC (VOLTAGE REGULATOR)	
IC2852	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2854	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2855	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2856	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC2857	C0DAAZG00011	IC (FOR POWER SUPPLY)	
IC3801	C1AA00000662	INT CKT	
IC5801	AN15530B	INT CKT	
IC5802	C0AABB000107	IC (OPERATIONAL AMPLIFIER)	
COILS			
L002	ELESN330JA	COIL, PEAKING 33UH	
L009	ELELN330KA	COIL, PEAKING 33UH	
L011	ELELN330KA	COIL, PEAKING 33UH	
L452	EXCELDR35V	FERRITE BEAD	
L453	ELC18B152L	COIL, CHOKE	
L454	EXCELSA35T	FERRITE BEAD	
L501	EXCELSA24T	FERRITE BEAD	

L502	EXCELSA24T	FERRITE BEAD	
L503	ELC12D103E	COIL, CHOKE	
L504	EXCELSA26T	FERRITE BEAD	
L505	EXCELSA26T	FERRITE BEAD	
L506	EXCELSA24T	FERRITE BEAD	
L509	ELC09D100F	COIL, CHOKE 10UH	
L510	ELC12D103E	COIL, CHOKE	
L514	EXCELSA35T	FERRITE BEAD	
L515	ELC09D471F	COIL, CHOKE 470UH	
L516	ELC09D101DF	COIL, CHOKE 100UH	
L516	ELC09D101F	COIL, CHOKE 100UH	
L553	EXCELSA35T	FERRITE BEAD	
L554	ELH5L8115	COIL, LINEARITY	
L561	ELC16B182L	COIL, CHOKE	
L812	EXCELSA39V	FERRITE BEAD	
L813	EXCELSA39V	FERRITE BEAD	
L816	EXCELSA39E	FERRITE BEAD	
L817	EXCELSA24T	FERRITE BEAD	
L818	EXCELSA24T	FERRITE BEAD	
L819	EXCELDR35V	FERRITE BEAD	
L821	EXCELSA39E	FERRITE BEAD	
L823	TLUADTB820K	COIL	
L824	EXCELDR35V	FERRITE BEAD	
L825	ELC09D470DF	COIL, CHOKE 47UH	
L826	ELC09D101DF	COIL, CHOKE 100UH	
L827	ELC09D101DF	COIL, CHOKE 100UH	
L829	EXCELDR25V	FERRITE BEAD	
L830	EXCELDR35V	FERRITE BEAD	
L831	EXCELDR35V	FERRITE BEAD	
L836	EXCELDR35V	FERRITE BEAD	
L845	G0A101ZA0041	COIL, LINE CHOKE	
L846	ELC09D220DF	COIL, CHOKE 22UH	
L901	TALV35VB100J	COIL	
L903	EXCELSA35T	FERRITE BEAD	
L904	EXCELSA35T	FERRITE BEAD	
L906	TALV35VB330J	COIL	
L2201	ELESN100JA	COIL, PEAKING 10UH	
L2304	ELC12E390	COIL, CHOKE 39UH	
L2305	ELC12E390	COIL, CHOKE 39UH	

L2306	EXCELDR35V	FERRITE BEAD	
L2307	EXCELDR35V	FERRITE BEAD	
L2341	G0A330G00010	COIL, LINE CHOKE	
L2342	G0A330G00010	COIL, LINE CHOKE	
L2854	G0A101ZA0041	COIL, LINE CHOKE	
L2855	G0A220GA0002	COIL, LINE CHOKE	
L2860	G0A470ZA0041	COIL, LINE CHOKE	
L2863	G0A470ZA0041	COIL, LINE CHOKE	
L2866	G0A470ZA0041	COIL, LINE CHOKE	
L2868	G0A470ZA0041	COIL, LINE CHOKE	
L2869	G0A470ZA0041	COIL, LINE CHOKE	
L3303	G0BYYYY00016	TRANSFORMER	
L3304	G0BYYYY00016	TRANSFORMER	
L3401	G0BYYYY00016	TRANSFORMER	
L3403	EXCELSA35T	FERRITE BEAD	
L3801	TALV35VB2R2J	COIL	
L3802	TALV35VB2R2J	COIL	
L3803	TALV35VB2R2J	COIL	
L3804	EXCELSA24T	FERRITE BEAD	
L3806	EXCELDR35V	FERRITE BEAD	
L3807	EXCELDR35V	FERRITE BEAD	
L3812	EXCELDR35V	FERRITE BEAD	
L3813	EXCELDR35V	FERRITE BEAD	
L3825	EXCELSA24T	FERRITE BEAD	
L3826	EXCELSA35T	FERRITE BEAD	
L3830	EXCELSA24T	FERRITE BEAD	
L552A	ELH5L7740	COIL, LINEARITY	
LF801	G0B650H00002	COIL	⚠
LF802	G0B650H00002	COIL	⚠
LF803	G0B650H00002	COIL	⚠
TRANSISTORS			
Q002	UNR221100L	TRANSISTOR	
Q003	UNR211500L	TRANSISTOR	
Q013	2PD601AR-115	TRANSISTOR	
Q404	2PD601AR-115	TRANSISTOR	
Q405	2PD601AR-115	TRANSISTOR	
Q406	2PD601AR-115	TRANSISTOR	
Q459	2SC1473AR	TRANSISTOR	

Q501	B1CEML000001	TRANSISTOR	
Q511	2PB709AR-115	TRANSISTOR	
Q512	2PD601AR-115	TRANSISTOR	
Q513	2PD601AR-115	TRANSISTOR	
Q514	2PD601AR-115	TRANSISTOR	
Q515	2PB709AR-115	TRANSISTOR	
Q516	2PD601AR-115	TRANSISTOR	
Q517	2PB709AR-115	TRANSISTOR	
Q551	2SC5686000LK	TRANSISTOR	
Q556	B1DAFU000002	TRANSISTOR	
Q560	B1DGDN000001	TRANSISTOR	
Q561	B1DEDQ000009	TRANSISTOR	
Q562	2SK2538000LB	TRANSISTOR	
Q563	B1BAAT000001	TRANSISTOR	
Q564	2SC1685QRSTA	TRANSISTOR	
Q565	2SC3311ASTA	TRANSISTOR	
Q566	2SC3311ASTA	TRANSISTOR	
Q701	B1DEDP000003	TRANSISTOR	
Q702	2PD601AR-115	TRANSISTOR	
Q703	2PD601AR-115	TRANSISTOR	
Q704	2PB709AR-115	TRANSISTOR	
Q802	2SC1685QRSTA	TRANSISTOR	
Q803	2SC1685QRSTA	TRANSISTOR	
Q804	UNR221100L	TRANSISTOR	
Q815	2PD601AR-115	TRANSISTOR	
Q816	2PD601AR-115	TRANSISTOR	
Q820	2SD2177RTA	TRANSISTOR	
Q821	2SB14340RA	TRANSISTOR	
Q822	2SA1309ATA	TRANSISTOR	
Q823	2PD601AR-115	TRANSISTOR	
Q824	2SA1309ATA	TRANSISTOR	
Q825	2PD601AR-115	TRANSISTOR	
Q826	2PD601AR-115	TRANSISTOR	
Q827	2SB1011RL	TRANSISTOR	
Q831	2SA1309ATA	TRANSISTOR	
Q900	2PD601AR-115	TRANSISTOR	
Q901	2PD601AR-115	TRANSISTOR	
Q903	2PD601AR-115	TRANSISTOR	
Q904	2PB709AR-115	TRANSISTOR	

Q905	2PD601AR-115	TRANSISTOR	
Q906	2SD592A	TRANSISTOR	
Q907	2SB621ATA	TRANSISTOR	
Q908	B1BCBL000018	TRANSISTOR	
Q909	B1BABL000016	TRANSISTOR	
Q910	2PB709AR-115	TRANSISTOR	
Q911	2PD601AR-115	TRANSISTOR	
Q912	2SC3311ASTA	TRANSISTOR	
Q913	2SA1309ASTA	TRANSISTOR	
Q1401	2PD601AR-115	TRANSISTOR	
Q1501	2PD601AR-115	TRANSISTOR	
Q1502	2PB709AR-115	TRANSISTOR	
Q1504	2PD601AR-115	TRANSISTOR	
Q1505	2PB709AR-115	TRANSISTOR	
Q1511	2PD601AR-115	TRANSISTOR	
Q1512	2PB709AR-115	TRANSISTOR	
Q2301	2PD601AR-115	TRANSISTOR	
Q2301	UNR221600L	TRANSISTOR	
Q2302	2PD601AR-115	TRANSISTOR	
Q2303	UNR211500L	TRANSISTOR	
Q2304	2PD601AR-115	TRANSISTOR	
Q2304	UNR221600L	TRANSISTOR	
Q2305	2PD601AR-115	TRANSISTOR	
Q2306	2PB709AR-115	TRANSISTOR	
Q2307	UNR211500L	TRANSISTOR	
Q2308	2PD601AR-115	TRANSISTOR	
Q2310	2PB709AR-115	TRANSISTOR	
Q2311	2PB709AR-115	TRANSISTOR	
Q2313	UNR221100L	TRANSISTOR	
Q2314	2PD601AR-115	TRANSISTOR	
Q2314	UNR221600L	TRANSISTOR	
Q2317	UNR221600L	TRANSISTOR	
Q2318	UNR221600L	TRANSISTOR	
Q2325	2PD601AR-115	TRANSISTOR	
Q2327	2PD601AR-115	TRANSISTOR	
Q2451	2PD601AR-115	TRANSISTOR	
Q2452	2PD601AR-115	TRANSISTOR	
Q2881	UNR211D00L	TRANSISTOR	
Q2893	UNR211500L	TRANSISTOR	

Q3801	2SA1767Q	TRANSISTOR	
Q3802	2SA1767Q	TRANSISTOR	
Q3803	2SA1767Q	TRANSISTOR	
Q3804	2SC58630QL	TRANSISTOR	
Q3805	2SC58630QL	TRANSISTOR	
Q3806	2SC58630QL	TRANSISTOR	
Q3807	B1BABL000016	TRANSISTOR	
Q3808	2SC2258RL	TRANSISTOR	
Q3809	2PB709AR-115	TRANSISTOR	
Q3810	2PB709AR-115	TRANSISTOR	
Q3811	2PB709AR-115	TRANSISTOR	
Q3812	2PD601AR-115	TRANSISTOR	
Q3813	2PD601AR-115	TRANSISTOR	
Q3814	2PD601AR-115	TRANSISTOR	
RELAYS			
RL801	K6B1AGA00043	RELAY	⚠
RL802	TSE10814	RELAY	⚠
RL803	K6B1AGA00042	RELAY	⚠
RL804	TSEH0034	RELAY	
RESISTORS			
R032	ERJ6GEYJ333V	RES,M 33K-J-1/10W	
R041	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R075	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R076	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R077	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R096	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R098	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R099	ERJ6GEYJ220V	RES,M 22-J-1/10W	
R100	ERJ6GEYJ242V	RES,M 2.4K-J-1/10W	
R101	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R102	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W	
R103	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W	
R104	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R106	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R107	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R108	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R109	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R121	ERDS1VJ680T	RES, C 68-J-1/2W	

R121	ERDS2TJ680T	RES,C 68-J-1/4W	
R122	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R123	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R124	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R125	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R126	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R127	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R129	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R451	EROS2THF1201	RES,M 1.2K-F-1/4W	
R452	EROS2THF2201	RES,M 2.2K-F-1/4W	
R453	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W	
R454	ERJ6ENF2702V	RES,M 27K-F-1/10W	
R455	ERG2FJ331H	RES,M 330-J-2W	
R456	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R457	ERDS1FJ560T	RES,C 56-J-1/2W	
R458	ERDS1FJ4R7P	RES,C 4.7-J-1/2W	
R459	ERDS1FJ4R7P	RES,C 4.7-J-1/2W	
R461	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R462	ERJ6GEYJ563V	RES,M 56K-J-1/10W	
R463	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R464	ERDS2TJ102T	RES,C 1K-J-1/4W	
R465	ERJ6GEYJ224V	RES,M 220K-J-1/10W	
R466	ERDS1FJ4R7P	RES,C 4.7-J-1/2W	
R467	ERDS1FJ4R7P	RES,C 4.7-J-1/2W	
R468	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R469	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R470	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R471	ERJ6ENF1802V	RES,M 18K-F-1/10W	
R472	ERJ6ENF1501V	RES,M 1.5K-F-1/10W	
R473	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R474	ERJ6GEYJ563V	RES,M 56K-J-1/10W	
R475	ERJ6GEYJ224V	RES,M 220K-J-1/10W	
R476	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R501	ERDS2TJ104T	RES,C 100K-J-1/4W	
R502	ERG2FJ390H	RES,M 39-J-2W	
R503	ERG3FJ221H	RES,M 220-J-3W	
R504	ERDS2TJ680T	RES,C 68-J-1/4W	
R505	ERG1SJ102P	RES,M 1K-J-1W	
R507	ERX2FJR22H	RES,M .22-J-2W	

R510	ERG3FJ561H	RES,M 560-J-3W	
R512	ERDS2TJ102T	RES,C 1K-J-1/4W	
R513	ERDS2TJ471T	RES,C 470-J-1/4W	
R514	EROS2THF2102	RES,M 21K-F-1/4W	⚠
R515	EROS2THF2102	RES,M 21K-F-1/4W	⚠
R516	ERDS2TJ101T	RES,C 100-J-1/4W	⚠
R517	ERC14GK103V	RES,M 10K-J-1W	
R518	ERDS2TJ103T	RES,C 10K-J-1/4W	
R519	ERDS2TJ221T	RES,C 220-J-1/4W	
R520	EROS2THF2102	RES,M 21K-F-1/4W	⚠
R521	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R522	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R523	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R524	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R525	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W	
R526	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R527	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R528	ERDS2TJ473T	RES,C 47K-J-1/4W	
R529	ERDS2TJ473T	RES,C 47K-J-1/4W	
R530	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R531	ERDS2TJ221T	RES,C 220-J-1/4W	
R533	ERDS2TJ102T	RES,C 1K-J-1/4W	
R534	ERDS2TJ152T	RES,C 1.5K-J-1/4W	
R535	ERDS2TJ472T	RES,C 4.7K-J-1/4W	
R536	ERDS2TJ221T	RES,C 220-J-1/4W	
R537	ERDS2TJ103T	RES,C 10K-J-1/4W	
R538	ERDS2TJ472T	RES,C 4.7K-J-1/4W	
R540	ERC14GK334V	RES,C 330K-K-1/4W	
R541	ERDS2TJ101T	RES,C 100-J-1/4W	
R542	ERDS2TJ103T	RES,C 10K-J-1/4W	
R543	ERDS2TJ103T	RES,C 10K-J-1/4W	
R547	ERG1SJ392P	RES,M 3.9K-J-1W	
R548	ERG3FJ202H	RES,M 2K-J-3W	
R549	ERG3FJ152H	RES,M 1.5K-J-3W	
R550	ERDS2TJ471T	RES,C 470-J-1/4W	
R551	ERC14GK184V	RES,C 180K-K-1/4	
R552	ERC14GK224V	RES,C 220K-K-1/4W	
R553	ERDS2TJ101T	RES,C 100-J-1/4W	

R554	ERDS2TJ473T	RES,C 47K-J-1/4W	
R557	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R558	ERDS2TJ332T	RES,C 3.3K-J-1/4W	
R558	ERDS2TJ473T	RES,C 47K-J-1/4W	
R559	ERC12GK104V	RES,C 100K-K-1/2W	
R560	ERC12GK225V	RES,C 2.2M-K-1/2W	
R560	ERDS2TJ102T	RES,C 1K-J-1/4W	
R561	EROS2THF2102	RES,M 21K-F-1/4W	⚠
R562	ERDS2TJ133T	RES,C 13K-J-1/4W	
R562	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R563	ERDS2TJ102T	RES,C 1K-J-1/4W	
R563	ERG2FJ123H	RES,M 12K-J-2W	
R564	ERDS2TJ101T	RES,C 100-J-1/4W	
R565	ERDS2TJ560T	RES,C 56-J-1/4W	
R566	ERDS2TJ101T	RES,C 100-J-1/4W	
R568	ERDS2TJ473T	RES,C 47K-J-1/4W	
R568	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R569	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R570	ERDS2TJ103T	RES,C 10K-J-1/4W	
R572	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R573	ERC14GK101V	RES,C 100-K-1/4W	
R574	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R575	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R576	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R577	EROS2THF2703	RES,M 270K-F-1/4W	
R578	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R579	ERDS2TJ392T	RES,C 3.9K-J-1/4W	
R580	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R581	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R582	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R583	ERJ6ENF1501V	RES,M 1.5K-F-1/10W	
R584	ERJ6ENF2201V	RES,M 2.2K-F-1/10W	
R586	EROS2THF2003	RES,M 200K-F-1/4W	
R587	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R589	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R590	ERJ6GEYJ331V	RES,M 330-J-1/10W	
R591	ERDS2TJ100T	RES,C 10-J-1/4W	
R592	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	

R593	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W	
R594	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R595	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R597	ERF5AJ680	RES,W 68-J-5W	
R598	ERX12SJR22P	RES,M .22-J-1/2W	
R598	ERX12SJR27P	RES,M .27-J-1/2W	
R599	ERX12SJR27P	RES,M .27-J-1/2W	
R599	ERX12SZJR15P	RES,M .15-J-1/2W	
R701	ERQ14AJ220P	RES,F 22-J-1/4W	
R702	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R703	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R704	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R705	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R718	ERG2FJ223H	RESM 22K-J-2W	
R732	EROS2THF6342	RES,M 63.4K-F-1/4W	
R733	EROS2THF6342	RES,M 63.4K-F-1/4W	
R734	EROS2THF1542	RES,M 15.4KF-1/4W	
R735	ERDS1FJ220P	RES,C 22-F-1/2W	
R736	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R784	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R785	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R786	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R787	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R800	ERU5TCK1R5T	RES,F 1.5-K-5W	⚠
R801	ERC14GK824V	RES,C 820K-K-1/4W	
R802	ERDS2TJ102T	RES,C 1K-J-1/4W	
R803	ERDS2TJ680T	RES,C 68-J-1/4W	
R804	ERDS2TJ331T	RES,C 330-J-1/4W	
R805	ERDS2TJ473T	RES,C 47K-J-1/4W	
R806	ERDS2TJ473T	RES,C 47K-J-1/4W	
R807	ERDS2TJ820T	RES,C 82-J-1/4W	
R808	ERDS2TJ680T	RES,C 68-J-1/4W	
R809	ERDS2TJ472T	RES,C 4.7K-J-1/4W	
R810	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R811	ERDS2TJ472T	RES,C 4.7K-J-1/4W	
R812	ERDS2TJ473T	RES,C 47K-J-1/4W	
R814	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R815	ERJ6GEYJ223V	RES,M 22K-J-1/10W	

R815	ERJ6GEYJ333V	RES,M 33K-J-1/10W	
R816	ERD75TAJ825	RES,C 8.2MEG-J-3/4W	⚠
R816	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R817	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R818	ERDS2TJ222T	RES,C 2.2K-J-1/4W	
R819	ERDS2TJ101T	RES,C 100-J-1/4W	
R819	ERDS2TJ391T	RES,C 390-J-1/4W	
R820	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W	
R830	ERDS1FJ330T	RES,C 30-J-1/2W	
R831	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R832	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R833	ERJ6GEYJ470V	RES,M 47-J-1/10W	
R834	ERDS2TJ473T	RES,C 47K-J-1/4W	
R835	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R840	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R841	ERQ12HKR22P	RES,F .22-K-1/2W	
R842	ERQ12HKR22P	RES,F .22-K-1/2W	
R844	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R845	ERDS1FJ222T	RES,C 2200-J-1/2W	
R846	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R847	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R848	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R849	ERDS2TJ223T	RES,C 22K-J-1/4W	
R849	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R850	ERDS2TJ152T	RES,C 1.5K-J-1/4W	
R851	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R852	ER050PHF2702	RES,M 27-F-1/2W	
R853	EROS2THF3601	RES,M 3.6K-F-1/4W	
R855	ERDS2TJ683T	RES,C 68K-J-1/4W	
R856	ERJ6GEYJ123V	RES,M 12K-J-1/10W	
R857	ERX1SJ1R2P	RES,M 1.2-J-1W	
R858	ERX1SJ1R2P	RES,M 1.2-J-1W	
R859	ERDS2TJ272T	RES,C 2.7K-J-1/4W	
R860	ERG1SJ102P	RES,M 1K-J-1W	
R861	ERX12SJR27P	RES,M .27-J-1/2W	
R862	ERX12SJR27P	RES,M .27-J-1/2W	
R863	ERX12SJR27P	RES,M .27-J-1/2W	
R864	ERJ6GEYJ104V	RES,M 100K-J-1/10W	

R865	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R866	ERJ6GEYJ561V	RES,M 560-J-1/10W	
R867	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W	
R868	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R869	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R870	ERDS2TJ102T	RES,C 1K-J-1/4W	
R872	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R872	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R873	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R874	ERDS1FJ390T	RES,C 39-J-1/2W	
R875	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R876	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R878	ERDS2TJ223T	RES,C 22K-J-1/4W	
R879	ERJ6ENF6801V	RES,M 6.8K-F-1/10W	
R882	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R884	ERX1SJ1R8P	RES,M 1.8-J-1W	
R886	ERDS2TJ272T	RES,C 2.7K-J-1/4W	
R886	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R887	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R888	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R889	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W	
R890	ERDS2TJ152T	RES,C 1.5K-J-1/4W	
R891	ERG1SJ823P	RES,M 82K-J-1W	
R892	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R893	ERDS1FJ332T	RES,C 3.3K-F-1/2W	
R894	ERJ6ENF1801V	RES,M 1.8K-F-1/10W	
R896	ERDS1TJ334T	RES,C 330K-J-1/2W	
R898	ERJ6GEYJ563V	RES,M 56K-J-1/10W	
R899	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R900	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R901	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R902	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W	
R903	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R904	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R906	ERJ6GEYJ333V	RES,M 33K-J-1/10W	
R907	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R908	ERJ6GEYJ151V	RES,M 150-J-1/10W	
R912	ERDS2TJ681T	RES,C 680-J-1/4W	
R915	ERDS2TJ221T	RES,C 220-J-1/4W	

R916	ERDS2TJ221T	RES,C 220-J-1/4W	
R917	ERQ14AJ100P	RES,F 10-J-1/4W	
R924	ERDS2TJ561T	RES,C 560-J-1/4W	
R925	ERDS2TJ683T	RES,C 68K-J-1/4W	
R926	ERDS2TJ683T	RES,C 68K-J-1/4W	
R927	ERDS2TJ561T	RES,C 560-J-1/4W	
R928	ERQ12AJ151P	RES,F 150-J-1/2W	
R929	ERQ14AJ2R2P	RES,F 2.2-J-1/4W	
R930	ERDS2TJ820T	RES,C 82-J-1/4W	
R931	ERQ14AJ2R2P	RES,F 2.2-J-1/4W	
R932	ERQ14AJ3R3P	RES,F 3.3-J-1/4W	
R933	ERQ14AJ3R3P	RES,F 3.3-J-1/4W	
R934	ERQ1CJP331S	RES,F 330-J-1W	
R935	ERG2FJ391H	RES,M 390-J-2W	
R937	ERJ6GEYJ121V	RES,M 120-J-1/10W	
R940	ERDS2TJ102T	RES,C 1K-J-1/4W	
R941	ERDS2TJ102T	RES,C 1K-J-1/4W	
R942	ERG2FJ391H	RES,M 390-J-2W	
R1051	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R1052	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R1053	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R1054	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R1055	ERJ6GEYJ512V	RES,M 5.1K-J-1/10W	
R1056	ERJ6GEYJ912V	RES,M 9.1K-J-1/10W	
R1057	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R1058	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1059	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R1060	ERJ6GEYJ470V	RES,M 47-J-1/10W	
R1061	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R1062	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W	
R1063	ERJ6GEYJ133V	RES,M 13K-J-1/10	
R1064	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1401	ERJ6ENF3902V	RES,M 39K-F-1/10W	
R1402	ERJ6ENF3012V	RES,M 30.1K-F-1/16W	
R1403	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R1404	ERJ6ENF8201V	RES,M 8.2K-F-1/10W	
R1405	ERJ6ENF9101V	RES,M 9.1K-F-1/10W	
R1406	ERJ6ENF2101V	RES,M 2.1K-F-1/10W	
R1407	ERJ6ENF6800V	RES,M 680-F-1/10W	

R1408	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R1409	ERDS2TJ473T	RES,C 47K-J-1/4W	
R1410	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R1411	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1507	ERJ6ENF4701V	RES,M 4.7K-F-1/10W	
R1508	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R1512	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R1514	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R1515	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R1518	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1522	ERJ6GEYJ330V	RES,M 33-J-1/10W	
R1523	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R1526	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1527	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R1529	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R1530	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1531	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1534	ERJ6ENF2201V	RES,M 2.2K-F-1/10W	
R1536	ERJ6ENF1962V	RES,M 19.6K-F-1/10W	
R1537	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1569	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R1583	ERJ6ENF5761V	RES,M 5.76K-F-1/10W	
R1585	ERJ6ENF3651V	RES,M 3.65K-F-1/16W	
R1587	ERJ6ENF2202V	RES,M 22K-F-1/10W	
R1588	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W	
R1591	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R1592	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W	
R1593	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R1599	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R2203	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W	
R2206	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2207	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2221	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R2301	ERJ6ENF1100V	RES,M 110-F-1/10W	
R2302	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2302	ERJ6ENF5232V	RES,M 5.32K-F-1/10W	
R2303	ERJ6ENF1100V	RES,M 110-F-1/10W	
R2304	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2304	ERJ6ENF4701V	RES,M 4.7K-F-1/10W	

R2307	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2308	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R2309	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2309	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R2310	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2312	ERJ6ENF1303V	RES,M 130K-F-1/10W	
R2313	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R2314	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2315	ERJ6GEYJ683V	RES,M 68K-J-1/10W	
R2316	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2317	ERJ6ENF4701V	RES,M 4.7K-F-1/10W	
R2318	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R2319	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2320	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2322	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2324	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2325	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2326	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2328	ERJ6GEYJ223V	RES,M 22K-J-1/10W	
R2329	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2331	ERJ6ENF5232V	RES,M 5.32K-F-1/10W	
R2332	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2332	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W	
R2333	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2334	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2335	ERJ6GEYJ271V	RES,M 270-J-1/10W	
R2336	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R2337	ERJ6GEYJ271V	RES,M 270-J-1/10W	
R2340	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R2342	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R2344	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R2345	ERJ6GEYJ683V	RES,M 68K-J-1/10W	
R2347	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R2351	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2352	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2353	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2354	ERJ6GEYJ432V	RES,M 4.3K-J-1/10W	
R2355	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2356	ERJ6GEYJ103V	RES,M 10K-J-1/10W	

R2357	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	
R2358	ERJ6GEYJ183V	RES,M 18K-J-1/10W	
R2359	ERJ6GEYJ432V	RES,M 4.3K-J-1/10W	
R2360	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2361	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2362	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R2363	ERDS2TJ102T	RES,C 1K-J-1/4W	
R2365	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2366	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2367	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R2368	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R2372	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2373	ERJ6GEYJ333V	RES,M 33K-J-1/10W	
R2374	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2375	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W	
R2379	ERJ6GEYJ473V	RES,M 47K-J-1/10W	
R2384	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	
R2385	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2396	ERDS2TJ102T	RES,C 1K-J-1/4W	
R2404	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W	
R2422	ERJ6GEYJ683V	RES,M 68K-J-1/10W	
R2451	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R2452	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R2453	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R2454	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2456	ERJ6GEYJ681V	RES,M 680-J-1/10W	
R2457	ERJ6GEYJ471V	RES,M 470-J-1/10W	
R2851	ERX2SJS1R3H	RES,M 1.3-J-2W	
R2852	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2853	ERJ6ENF1911V	RES,M 1.91K-F-1/10W	
R2854	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R2856	ERJ6ENF1651V	RES,M 1.65K-F-1/10W	
R2857	ERJ6ENF1021V	RES,M 1.02K-F-1/10W	
R2858	ERJ6ENF1541V	RES,M 1.54K-F-1/10W	
R2859	ERJ6ENF1471V	RES,M 1.47K-F-1/10W	
R2860	ERJ6ENF4300V	RES,M 430-F-1/10W	
R2861	ERJ6ENF1001V	RES,M 1K-F-1/10W	
R2862	ERJ6ENF3001V	RES,M 3K-F-1/10W	
R2863	ERJ6ENF1001V	RES,M 1K-F-1/10W	

R2863	ERJ6ENF9760V	RES,M 976-F-1/10W	
R2883	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R2892	ERJ6ENF1002V	RES,M 10K-F-1/10W	
R3301	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3302	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3303	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3304	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3305	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3306	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3307	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3308	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3309	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3310	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3311	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3312	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3313	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3314	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3315	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3316	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3317	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3318	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3319	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3320	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R3321	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3322	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3323	ERJ6ENF75R0V	RES,M 75.0-F-1/10W	
R3324	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3326	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3327	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3328	ERJ6GEYJ184V	RES,M 180K-J-1/10W	
R3403	ERJ6GEYJ224V	RES,M 220K-J-1/10W	
R3404	ERJ6GEYJ224V	RES,M 220K-J-1/10W	
R3801	ERJ6GEYJ560V	RES,M 56-J-1/10W	
R3802	ERJ6GEYJ560V	RES,M 56-J-1/10W	
R3803	ERJ6GEYJ560V	RES,M 56-J-1/10W	
R3804	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3805	ERDS2TJ471T	RES,C 470-J-1/4W	
R3806	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3807	EROS2THF3013	RES,M 301K-F-1/4W	

R3808	ERJ6ENF1402V	RES,M 14K-F-1/10W	
R3809	ERJ6GEYJ330V	RES,M 33-J-1/10W	
R3810	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3811	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3812	ERJ6GEYJ330V	RES,M 33-J-1/10W	
R3813	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3814	EROS2THF3013	RES,M 301K-F-1/4W	
R3815	ERJ6ENF1402V	RES,M 14K-F-1/10W	
R3816	ERJ6GEYJ330V	RES,M 33-J-1/10W	
R3817	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3818	ERDS2TJ224T	RES,C 220K-J-1/4W	
R3819	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3820	ERDS2TJ224T	RES,C 220K-J-1/4W	
R3821	ERDS2TJ104T	RES,C 100K-J-1/4W	
R3822	EROS2THF3013	RES,M 301K-F-1/4W	
R3823	ERDS2TJ224T	RES,C 220K-J-1/4W	
R3824	ERC12GK101V	RES,C 100-K-1/2W	
R3825	ERC12GK101V	RES,C 100-K-1/2W	
R3826	ERC12GK101V	RES,C 100-K-1/2W	
R3827	ERJ6ENF1402V	RES,M 14K-F-1/10W	
R3828	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R3829	ERJ6GEYJ102V	RES,M 1K-J-1/10W	
R3830	ERG1SJ682P	RES,M 6.8K-J-1W	
R3831	ERG2FJ333H	RES,M 33K-J-2W	
R3832	ERDS2TJ151T	RES,C 150-J-1/4W	
R3833	ERDS2TJ151T	RES,C 150-J-1/4W	
R3834	ERDS2TJ151T	RES,C 150-J-1/4W	
R3836	ERG2FJ101H	RES,M 100-J-2W	
R3843	ERDS2TJ224T	RES,C 220K-J-1/4W	
R3844	EROS2THF8871	RES,M 8.87K-F-1/4W	
R3845	ERJ6ENF33R0V	RES,M 33.OK-F-1/10W	
R3846	ERJ6ENF33R0V	RES,M 33.OK-F-1/10W	
R3847	ERJ6ENF33R0V	RES,M 33.OK-F-1/10W	
R3848	ERJ6ENF2200V	RES,M 220-F-1/10W	
R3849	ERJ6ENF2200V	RES,M 220-F-1/10W	
R3850	ERJ6ENF2200V	RES,M 220-F-1/10W	
R3851	ERJ6GEYJ391V	RES,M 390-J-1/10W	
R3852	ERJ6GEYJ391V	RES,M 390-J-1/10W	
R3853	ERJ6GEYJ391V	RES,M 390-J-1/10W	

R3857	ERG2FJ393H	RES,M 39K-J-2W	
R5501	ERJ6GEYJ153V	RES,M 15K-J-1/10W	
R5502	ERJ6GEYJ153V	RES,M 15K-J-1/10W	
R5504	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R5505	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R5507	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R5508	ERJ6GEYJ101V	RES,M 100-J-1/10W	
R5511	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
R5801	ERJ6GEYJ153V	RES,M 15K-J-1/10W	
R5802	ERJ6GEYJ104V	RES,M 100K-J-1/10W	
R5804	ERG1SJ470P	RES,M 47-J-1W	
R5805	ERDS1FJ1R0T	RES,C 1.0-J-1/2W	
R5806	ERJ6ENF5602V	RES,M 56K-F-1/10W	
R5807	ERJ6ENF2001V	RES,M 2K-F-1/10W	
R5808	ERDS1FJ391T	RES,C 390-J-1/2W	
R5809	ERX12SJR68P	RES,M .68-J-1/2W	
R5810	ERX12SJR47P	RES,M .47-J-1/2W	
R5811	ERDS2TJ102T	RES,C 1K-J-1/4W	
R5812	ERDS2TJ822T	RES,C 8.2K-J-1/4W	
R5813	ERDS1FJ391T	RES,C 390-J-1/2W	
R5815	ERJ6GEYJ103V	RES,M 10K-J-1/10W	
SWITCHES			
SW001	EVQPBD05R	SWITCH	
SW002	EVQPBD05R	SWITCH	
SW003	EVQPBD05R	SWITCH	
SW004	EVQPBD05R	SWITCH	
SW005	EVQPBD05R	SWITCH	
SW006	EVQPBD05R	SWITCH	
SW007	EVQPBD05R	SWITCH	
SW008	EVQPBD05R	SWITCH	
TRANSFORMERS			
T501	ETH19K207AZ	TRANSFORMER	
T550	G4E1A0000011	TRANSFORMER	
T551	ZTFN95006A	TRANSFORMER,FLYBACK	⚠
T553	ETS28AU2K9AD	TRANSFORMER	
T561	ETF18L101A	TRANSFORMER	
T801	ETS42AU185AD	TRANSFORMER	⚠
T802	ETP28KBZA1ZG	TRANSFORMER	⚠

T3023	G0BYYYY00016	TRANSFORMER	
OTHERS			
TNR001	ENGF6302GF	TUNER	⚠
TNR002	ENG36A08GF	TUNER	⚠
1	M80LSW095X	CRT	⚠
M001	K3B10CA00041	CRT SOCKET	
2	TLY2AA039	YOKE DEFLECTION	⚠
M002	TXFYA010EEW	DAG GROUND	
3	TSP2AA034	DEGAUSSING COIL	⚠
4	TSP2AF007	ROTATION COIL	
5	TSP2AF009	GEOMAGNETIC COIL	
6	EASG12S503A2	WOOFER SPEAKER	
7	EASG7DH08E2	TWEETER	
M003	TKP2AA1311S	SPEAKER BOX BASE	
M004	TXFKP10JSER	SPEAKER BOX COVER	
8	TBX2AA0241	DISC BUTTON	
9	TBX2AA0251	FUNCTION KEY BUTTONS	
10	TKX2AA0201	LED GUIDE	
11	TKX2AA0211	IR GUIDE	
12	TEK6935	DOOR CATCH	
13	TKP2AA1122S	DOOR PANEL	
M005	TMW2A97121	BRKT A/C CORD	
M006	TMZ2AC50011	BRACKET SUPPORT CRT	
M007	TSM2AA001	MAGNET, PERMALLOY	
M008	TSN63115-4	MAGNET, PURITY	
M009	TSX2AA0411	LINE CORD	⚠
M010	TXFKP11JSER	A/V BRACKET	
14	TXFKU01HG4S	CABINET BACK	
15	TXFKY01HG4S	CABINET FRONT	
JK3301	TJB2AA0521	CONNECTOR	
JK3401	TJB2AA0511	CONNECTOR	
JK3302A	TJB2AA0532	CONNECTOR	
JK3804A	K3B10CA00041	CONNECTOR	
ACCESORIES			
M011	TQB2AA0500	OWNERS MANUAL	
M012	EUR7603ZF0	REMOTE CONTROL	

M013	EUR7603ZFA	REMOTE CONTROL	
M014	UR76EC0303E	BATTERY COVER REMOTE CONTROLS	

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